Appendix B. Traffic Analysis

FINAL Traffic Impact Analysis

Chula Vista Urban Core

October 2005

Prepared for:
RRM Design Group

Project No. 095413000

FINAL Traffic Impact Analysis

Chula Vista Urban Core

October 2005

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1.0 INTRODUCTION

This study evaluates the potential traffic-related impacts associated with the adoption of the Chula Vista Urban Core Specific Plan. This study determines the appropriate geometric design of the urban arterials, as defined in the Chula Vista General Plan. In addition, this study will recommend improvements to achieve acceptable LOS for any potential traffic impacts associated with the project. This study will serve as the traffic impact analysis for future redevelopment projects consistent with the Urban Core Specific Plan.

Project Description

The Chula Vista Urban Core is located in the northwestern portion of the City of Chula Vista, California. **Figure 1-1** illustrates the project study area in a regional context. The Urban Core Specific Plan (UCSP) Study Area covers approximately 1,700 acres within the northwestern portion of the City of Chula Vista. It is generally bordered by the San Diego Freeway (I-5) to the west, C Street to the north, Del Mar Street to the east, and L Street to the south. While there are 1,700 acres within the UCSP Study Area, it was determined that the proposed changes to land use designations be focused on areas more in need of revitalization. Therefore, the Specific Plan boundary focuses on the development and redevelopment of approximately 690 gross acres within the larger UCSP Study Area. **Figure 1-2** illustrates both the UCSP Study Area and the Focus Area.

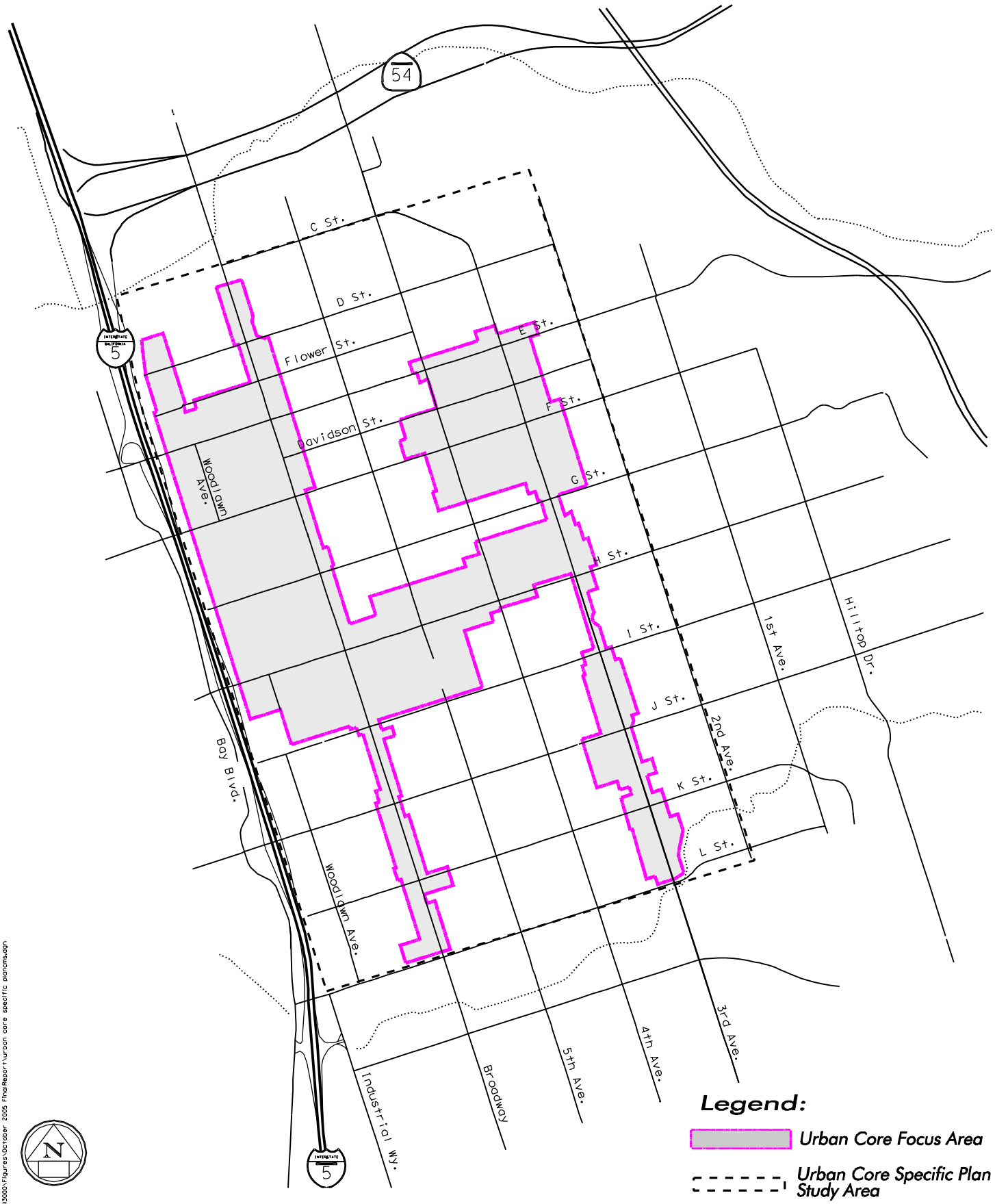
Analysis Scenarios

A total of three scenarios were analyzed as part of the Urban Core project, which are listed below:

- ***Existing Conditions***
  - Existing Conditions: Represents the traffic conditions of the existing street network, primarily in the Urban Core Focus Area, but also includes key intersections and roadway segments within and near the Urban Core Specific Plan Study Area.
- ***Year 2030***
  - Year 2030 Conditions: Represents the traffic conditions of the street network consistent with the adopted general plan update, implementation of the regional transit vision, and full build-out of the Urban Core.
  - Year 2030 With Improvements Conditions: Represents the traffic conditions of the street network with improvements to several roadways and intersections.

It should be noted that due to urban revitalization, the timing, sequencing, and the extent of development is not predictable and is speculative. The Urban Core Specific Plan covers a large geographic area, which could redevelop in many different ways. As a result, the intermediate years were not analyzed; only the full buildout of the Urban Core was analyzed. As such, the impacts resulting from the full buildout of the Urban Core would be considered cumulative impacts.


Miramar Rd
805
15
Marine Corps Air Station Miramar
Santee Lakes
Mast Blvd
Lakesi
67
Santee
Pepper Dr
52
125
Mission Gorge Rd
Ruffin Rd
274
Aero Dr
Fanita Dr
Navajo Rd
Pkwy
Bosto
S A N D I E G O
Murray Reservoir
El Cajon
163
Friars Rd
San Diego
Fuente Dr
Fiesta Island
Montezuma Rd
54
La Mesa
Casa de Oro
Spring Valley
C A L I F O R N I A
Lemon Grove
209
Nimitz Blvd
N Harbor Dr
5th Ave
54th St
Chollas Reservoir
94
15
B St
San Diego
Market St
Imperial Ave
S17
North Island
Skyline Dr
Coronado
Paradise Valley Rd
Sweetwater Reservoir
54
75
National City
Lincoln Acres
San Diego Bay
Bonita
E St
Chula Vista
E H St
Otay Lakes Rd
Pacific Ocean
4th Ave
Hilltop Dr
Oleander Ave
75
Imperial Beach
Main St
Palm Ave
Brown Field Municipal Airport
905
905
Urban Core Specific Plan
Imperial Beach Naval Air Station
San Ysidro Larsen Field
Tijuana
N
B A J A C A L I F O R N I A



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PLOTTED : 10/7/2005

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Figure 1-2

Urban Core Specific Plan

2.0 METHODOLOGY

The following section describes the methodology used in the determination of study intersections, analysis process, and determination of significant impacts.

Study Intersections

The Urban Core is located in the Northwest Planning Subarea, located south of SR-54, west of I-805, north of L Street, and east of I-5. More specifically, the Urban Core Specific Plan is bounded by C Street, Del Mar Avenue, L Street, and I-5. The following intersections shown in **Table 2-1** were identified for evaluation. These intersections represent all key intersections in the Urban Core Specific Plan and others that could be influenced by land use intensifications within the Urban Core.

TABLE 2-1
STUDY INTERSECTIONS

	Intersection	Traffic Control (a)
1	Bay Blvd-I-5 SB Ramp @ E St (b)	Signal
2	I-5 NB Ramp @ E St	Signal
3	Woodlawn Ave @ E St	Signal
4	Broadway @ E St	Signal
5	5th Ave @ E St	Signal
6	4th Ave @ E St	Signal
7	3rd Ave @ E St	Signal
8	2nd Ave @ E St	Signal
9	1st Ave @ E St (b)	Signal
10	Flower St @ E St (b)	Signal
11	Bonita Glen Dr @ Bonita Rd (b)	Signal
12	Bay Blvd @ F St (b)	AWSC
13	Broadway @ F St	Signal
14	5th Ave @ F St	Signal
15	4th Ave @ F St	Signal
16	3rd Ave @ F St	Signal
17	2nd Ave @ F St	Signal
18	Broadway @ G St	Signal
19	5th Ave @ G St	Signal
20	4th Ave @ G St	Signal
21	3rd Ave @ G St	Signal
22	2nd Ave @ G St	AWSC
23	Hilltop Dr @ G St (b)	AWSC
24	I-5 SB Ramp @ H St	Signal
25	I-5 NB Ramp @ H St	Signal

Notes:
(a) Signal = Traffic signal, AWSC = All-way Stop Control, TWSC = Two-way Stop Control
(b) Outside of Urban Core Specific Plan study area, but due to proximity and ingress/egress patterns, these intersections were included as part of the study area.

TABLE 2-1
STUDY INTERSECTIONS (Continued)

	Intersection	Traffic Control (a)
26	Woodlawn Ave @ H St	Signal
27	Broadway @ H St	Signal
28	5th Ave @ H St	Signal
29	4th Ave @ H St	Signal
30	3rd Ave @ H St	Signal
31	2nd Ave @ H St	Signal
32	1st Ave @ H St (b)	Signal
33	Hilltop Dr @ H St (b)	Signal
34	Broadway @ SR-54 WB Ramp (b)	Signal
35	Broadway @ SR-54 EB Ramp (b)	Signal
36	Broadway @ C St	Signal
37	Broadway @ D Street	Signal
38	Broadway @ Flower St	Signal
39	Broadway @ I St	Signal
40	Broadway @ J St	Signal
41	Broadway @ K St	Signal
42	Broadway @ L St	Signal
43	4th Ave @ SR-54 WB Ramp (b)	Signal
44	4th Ave @ SR-54 EB Ramp (b)	Signal
45	4th Ave @ Brisbane St (b)	Signal
46	4th Ave @ C St	Signal
47	4th Ave @ D St	Signal
48	4th Ave @ I St	Signal
49	4th Ave @ J St	Signal
50	4th Ave @ K St	Signal
51	4th Ave @ L St	Signal
52	3rd Ave @ Davidson St	Signal
53	3rd Ave @ I St	Signal
54	3rd Ave @ J St	Signal
55	3rd Ave @ K St	Signal
56	3rd Ave @ L St	Signal
57	2nd Ave @ D St	AWSC
58	J St @ I-5 SB Ramp	Signal
59	J St @ I-5 NB Ramp	Signal
60	Woodlawn Ave @ J St	TWSC
61	L St @ Bay Blvd	TWSC
62	L St @ Industrial Blvd	Signal
63	Bay Blvd @ I-5 SB Ramp (b)	TWSC
64	Industrial Blvd @ I-5 NB Ramp (b)	AWSC

Notes:
(a) Signal = Traffic signal, AWSC = All-way Stop Control, TWSC = Two-way Stop Control
(b) Outside of Urban Core Specific Plan study area, but due to proximity and ingress/egress patterns, these intersections were included as part of the study area.

As shown in Table 2-1, 56 signalized intersections exist near and within the Urban Core Specific Plan study area under existing conditions. It should be noted that intersections 1, 9 through 12, 23, 32 through 35, 43 through 45, 63, and 64 are outside of the Urban Core Specific Plan study area, but are included in the analysis due to the proximity and ingress/egress patterns. **Figure 2-1** displays the location of the study intersections.

Analysis Process

The analysis process includes determining the operations at the study intersections for the a.m. and p.m. peak-hours and operations on roadway segments using ADT volumes. Intersections will be measured and quantified by using the Synchro traffic analysis software package. Roadway segments will be measured based on each segment's volume and assigned capacity. Results will be compared to the City's standards to determine the level of service (LOS).

Analysis Software

To analyze the operations of both signalized and unsignalized intersections, Synchro 6 (Trafficware) was used for the analysis. Synchro 6 uses the methodologies outlined in the 2000 *Highway Capacity Manual (HCM)*.

The default peak-hour factor (PHF) of 0.92 was used for the Existing Conditions and Year 2030 scenarios. Under the Year 2030 scenario, all signal timings and phasings at the study intersections were optimized as a network and a common cycle length was selected at all intersections. Also, it should be noted that at each interchange, the two ramp intersections were optimized separately and assumed to be coordinated.

Signalized Intersections

The 2000 *HCM* published by the Transportation Research Board establishes a system whereby highway facilities are rated for their ability to process traffic volumes. The terminology "level of service" is used to provide a "qualitative" evaluation based on certain "quantitative" calculations, which are related to empirical values.

LOS for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and loss of travel time. Specifically, LOS criteria are stated in terms of the average control delay per vehicle for the peak 15-minute period within the hour analyzed. The average control delay includes initial deceleration delay, queue move-up time, and final acceleration time in addition to the stop delay. The criteria for the various levels of service designations are given in **Table 2-2**.

TABLE 2-2
LEVEL OF SERVICE (LOS) CRITERIA FOR SIGNALIZED INTERSECTIONS

LOS	Control Delay (sec/veh) (a)	Description
A	≤10.0	Operations with very low delay and most vehicles do not stop.
B	<10.0 and <20.0	Operations with good progression but with some restricted movement.
C	>20.0 and <35.0	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	>35.0 and <55.0	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines.
E	>55.0 and <80.0	Operations where there is significant delay, extensive queuing, and poor progression.
F	>80.0	Operations that are unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

Notes:
(a) 2000 Highway Capacity Manual, Chapter 16, Page 2, Exhibit 16-2

Effects of At-Grade Trolley Crossings

As part of the General Plan Update transportation analysis, the effects of the trolley grade crossings at E Street and H Street were evaluated. The analysis replicated the effects of a trolley/rail crossing by assuming a signal at the trolley crossings. A summary of this analysis is included as an attachment to this report (see **Appendix A**). The analysis assumed that a trolley would cross once per every five minutes, using current trolley service and once every two and a half minutes using planned service increases. Field observations indicate that the trolley crossing guards stay down for about 54 seconds. This means that one-sixth of the time, the trolley crossings are down and with future service enhancements, the trolley crossing guards are down one-third of the time.

With the trolley crossings down, queues would start to form in the east-west direction and extend into adjacent intersections. This would cause additional delays and affect the operations at each impacted intersection. As such, delays shown in the respective intersection summary tables for the intersections affected by the trolley crossings would be increased between 17 and 40 seconds per vehicle, causing a drop in LOS grade.

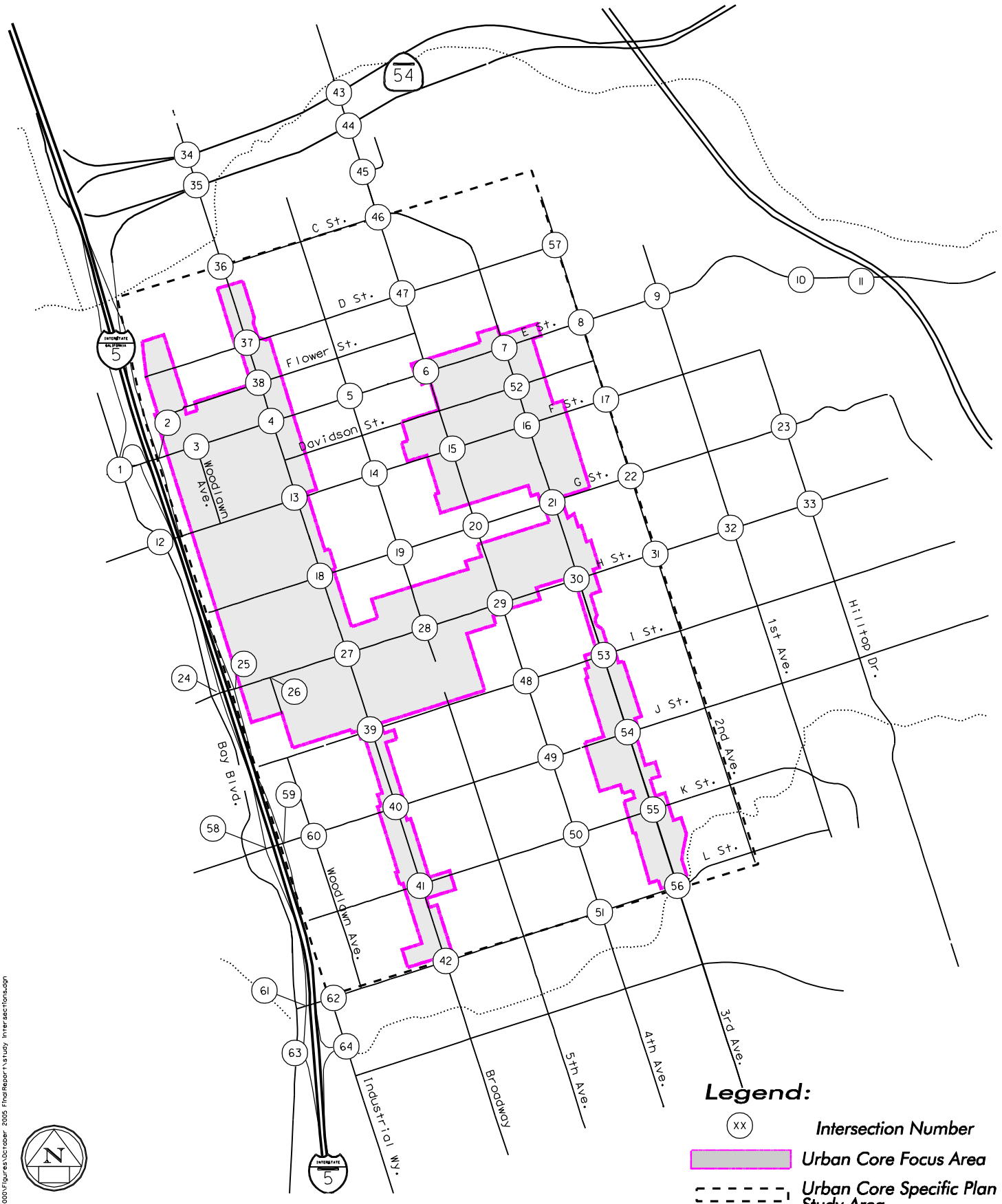

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Figure 2-1

Study Intersections

Roadway Segments

In order to determine the LOS for a street segment on a daily basis, the average daily traffic (ADT) volume is compared to its maximum acceptable volume for each type of roadway (arterial, collector, etc.) in the City. The roadway segment capacities of Circulation Element roadways (Class I Collectors and above) were evaluated under existing and proposed conditions using LOS thresholds published by the City of Chula Vista's adopted General Plan. Volume-to-Capacity (v/c) ratios were calculated for each segment. It should be noted that the capacity of a roadway is equal to the maximum LOS E volume, but the LOS is based on the acceptable volume for each respective type of facility. **Table 2-3** summarizes the acceptable volumes with its corresponding LOS for each Circulation Element and Urban Core Circulation Roadway. A more detailed discussion related to the development of the Urban Core Circulation Element is contained in Section 1.2 of the 2005 adopted General Plan.

TABLE 2-3
ROADWAY SEGMENT CAPACITY AND LEVEL OF SERVICE

FACILITY		ACCEPTABLE LOS	LEVEL OF SERVICE (LOS)				
CLASS (a)	LANES		A	B	C	D	E
CIRCULATION ELEMENT ROADWAYS							
Expressway	7/8	C	52,500	61,300	70,000	78,800	87,500
Prime	6	C	37,500	43,800	50,000	56,300	62,500
Major Street	6	C	30,000	35,000	40,000	45,000	50,000
	4	C	22,500	26,300	30,000	33,800	37,500
Class I Collector	4	C	16,500	19,300	22,000	24,800	27,500
URBAN CORE CIRCULATION ELEMENT ROADWAYS							
Gateway Street	6	D	40,800	47,600	54,400	61,200	68,000
	4	D	28,800	33,600	38,400	43,200	48,000
Urban Arterial	4	D	25,200	29,400	33,600	37,800	42,000
Commercial Boulevard	4	D	22,500	26,250	30,000	33,750	37,500
Downtown Promenade	4	D	22,500	26,250	30,000	33,750	37,500
	2	D	9,600	11,200	12,800	14,400	16,000

Note:
Shaded cells correspond to the acceptable traffic volumes for each respective roadway.
(a) The adopted Circulation Element roadways are considered to be Class I Collector Streets and above, and the Urban Core Circulation Element are considered to be 6-lane Gateway Streets and below.

Significance Determination

The significance criteria to evaluate the project impacts to intersections are based on the City of Chula Vista's *Guidelines for Traffic Impact Studies in the City of Chula Vista*, February 13, 2001 and on the City of Chula Vista's adopted General Plan. At intersections, the measurement of effectiveness (MOE) is based on allowable increases in delay. At roadway segments, the MOE is based on allowable increases in the ADT.

Within the City of Chula Vista, the goal is to achieve LOS D or better at all signalized and unsignalized intersections. A project specific impact would occur if the operations at intersections are at LOS E or F *and* the project trips comprise five percent or more of the entering volume. Entering volumes are defined as the number of vehicles "entering" an intersection during a peak-hour. A cumulative impact would occur if the operations at intersections are at LOS E or F only.

For non-Urban Core Circulation Element roadways (Expressway, Prime Arterial, Major Street, Town Center Arterial, Class I Collector), a roadway segment that currently operates at LOS C or better and with the proposed changes would operate at LOS D or worse at General Plan buildout is considered a significant impact. In addition, a roadway segment that currently operates at LOS D or E would operate at LOS E or F at General Plan buildout, respectively, or which operates at LOS D, E, or F and would worsen by five percent or more at General Plan buildout is considered a significant impact.

For Urban Core Circulation Element roadways (Gateway Street, Urban Arterial, Commercial Boulevard, Downtown Promenade), a roadway segment that currently operates at LOS D or better and with the proposed changes would operate at LOS E or F at General Plan buildout is considered a significant impact. In addition, a roadway segment that currently operates at LOS F and would worsen by five percent of more at General Plan buildout is considered a significant impact. **Table 2-4** shows the criteria for determining levels of significance at intersections and roadway segments.

TABLE 2-4
LEVELS OF SIGNIFICANCE CRITERIA FOR INTERSECTIONS AND ROADWAY SEGMENTS

Facility	Measurement of Effectiveness (MOE)	Significance Threshold
Intersection	Seconds of delay	LOS E or F and >5% of entering volume
Roadway Segment	ADT	Non Urban Core Circulation Element Roadways: LOS C or better à LOS D or worse at buildout or LOS D/E à LOS E/F at buildout and >5% of entering volume Urban Core Circulation Element Roadways: LOS D or better à LOS E/F at buildout or LOS E/F and >5% of entering volume

Source: *Guidelines for Traffic Impact Studies in the City of Chula Vista*, February 13, 2001 and City of Chula Vista Adopted General Plan.

3.0 EXISTING CONDITIONS

This section summarizes the existing roadway circulation network, peak-hour and daily traffic volumes, and operations at the study intersections and roadway segments.

Road Network

The following provides a description of the existing street system within the Urban Core study area. It should be noted that the street network is set up in a grid system, with "Streets" typically running east-west and "Avenues" typically running north-south. In addition, each section contains an exhibit of a typical cross section for each respective roadway segment.

E Street is an east-west roadway. E Street is classified as a four-lane gateway street between I-5 and I-805, with the exception of the segment between Broadway and First Avenue, which is classified as a four-lane urban arterial. E Street is four lanes between 3rd Avenue and Broadway, approximately 62 feet in width. Parallel parking is provided on both sides of the street in this section. E Street to the west of Broadway has four lanes, is approximately 70 feet in width, has a two-way left-turn lane, and has no on-street parking. Sidewalks are provided on both sides of the roadway in both sections. The posted speed limit is 30 mph.

F Street is an east-west roadway. F Street is classified as a four-lane downtown promenade between I-5 and Broadway and as a two-lane downtown promenade between Broadway and Third Avenue. F Street is four lanes between Third Avenue and Fourth Avenue with a raised median in the center and is approximately 65 feet in width. The only on-street parking provided in this segment is limited parallel parking on the north side of F Street between Third Avenue and Garret Avenue. Between Fourth Avenue and Broadway, F Street is a two-lane roadway, approximately 40 feet in width with parallel parking on both sides. F Street has four lanes between Broadway and I-5 with parallel parking on both sides and is approximately 66 feet in width. Sidewalks are provided on both sides of the roadway in all three sections. The posted speed limit is 30 mph.

H Street is an east-west roadway with a center two-way left turn lane. H Street is classified as a six-lane gateway street between I-5 and Broadway and between Hilltop Drive and I-805 and as a four-lane urban arterial between Broadway and Hilltop Drive; however, it should be noted that H Street is not built to its ultimate classification and functions as a four-lane roadway between I-5 and Broadway. Parking is provided on-street east of Third Avenue. H Street is approximately 70 feet in curb-to-curb width between Third Avenue and Broadway and 64 feet in curb-to-curb width between Broadway and I-5. Sidewalks are provided on both sides of the street. The posted speed limit is 35 mph.

Broadway is a north-south roadway. Broadway is classified as a four-lane gateway street between SR-54 and C Street and a four-lane commercial boulevard between C Street and L Street. Parallel parking is provided on both sides of the roadway. Between F Street and H Street, there is a two-way left turn lane and the roadway is approximately 82 feet in width. Broadway is approximately 68 feet in width between E Street and F Street. Sidewalks are provided on both sides of the street. The posted speed limit is 35 mph.

3rd Avenue is a north-south roadway. Third Avenue is classified as a four-lane commercial boulevard between C Street and E Street and between H Street and L Street and classified as a two/four-lane downtown promenade between E Street and H Street. Third Avenue is two lanes between E Street and F Street, approximately 72 feet in width. Between F Street and Madrona Street, Third Avenue is a four-lane

roadway with a raised median, approximately 101 feet in width. Between Madrona Street and G Street, Third Avenue is four lanes and approximately 72 feet in width. Angled parking is provided in these first three sections. Third Avenue is a four-lane roadway with a center two-way left-turn lane between G Street and H Street; approximately 66 feet in width and including parallel parking. Sidewalks are provided on both sides of the street in all four sections. The posted speed limit is 35 mph.

Table 3-1 summarizes the existing roadway segment dimensions based on field observations and measurements by Kimley-Horn staff.

Figures 3-1 to **3-1.5** show the existing lane configurations and traffic control at the study intersections and **Figure 3-2** shows the number of lanes and street classification on each evaluated roadway segment within the vicinity of the project site.

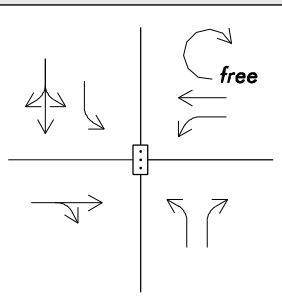
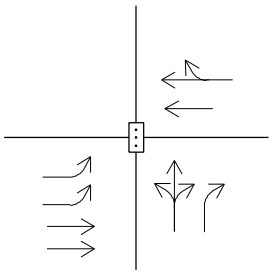
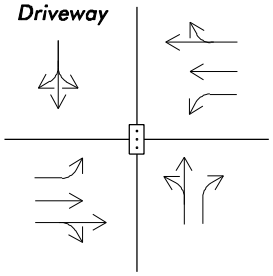
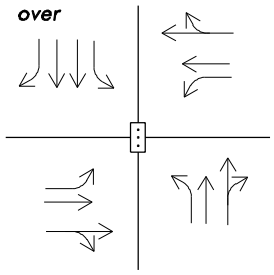
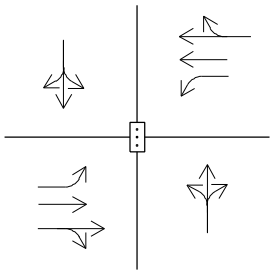
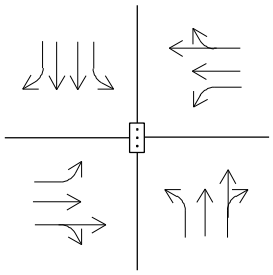
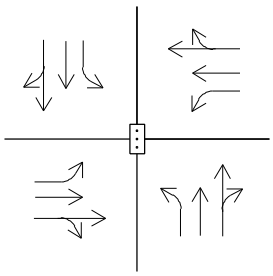
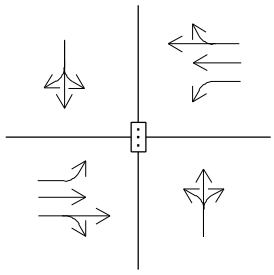
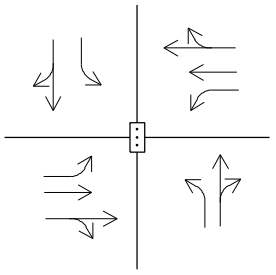
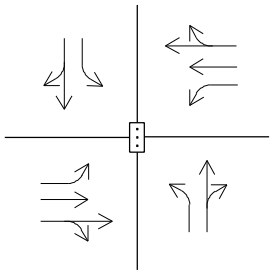
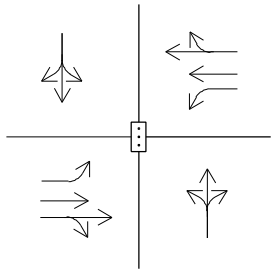
TABLE 3-1
EXISTING ROADWAY SEGMENT DIMENSIONS

Street Segment	Total Travel Lanes	Median/Turn Lane	Curb-to-Curb Width	Parking	Bike Lane
E St between I-5 and Woodlawn Ave	4	Two-Way Left Turn Lane	70’	N	N
E St between Woodlawn Ave and Broadway	4	Two-Way Left Turn Lane	70’	N	N
E St between Broadway and 1st Ave	4	N	62’	Y	N
E St between 1st Ave and I-805	4	Two-Way Left Turn Lane	71’	N	Y
F St between I-5 and Woodlawn Ave	4	N	66’	Y	N
F St between Woodlawn Ave and Broadway	4	N	66’	Y	N
F St between Broadway and 4th Ave	2	N	40’	Y	N
F St between 4th Ave and 3rd Ave	4	Raised Median	65’	N	N
H St between I-5 and Broadway	4	Two-Way Left Turn Lane	64’	N	N
H St between Broadway and 3rd Ave	4	Two-Way Left Turn Lane	64’	N	N
H St between 3rd Ave and Hilltop Dr	4	Two-Way Left Turn Lane	64’	N	Y
H St between Hilltop Dr and I-805	4	N	65’	N	N
J St between Bay Blvd and Broadway	4	Raised Median	67’	N	N
L St between I-5 and Broadway	4	Two-Way Left Turn Lane	63’	N	N
L St between Broadway and Hilltop Dr	4	N	64’	Y	N
Woodlawn Ave between E St and F St	2	N	36’	Y	N
Woodlawn Ave between G St and H St	2	N	33’	Y	N

TABLE 3-1
EXISTING ROADWAY SEGMENT DIMENSIONS (Continued)

Street Segment	Total Travel Lanes	Median/Turn Lane	Curb-to-Curb Width	Parking	Bike Lane
Broadway between SR-54 and C St	4	N	68’	N	N
Broadway between C St and E St	4	Two-Way Left Turn Lane	70’	Y	N
Broadway between E St and F St	4	N	68’	Y	N
Broadway between F St and H St	4	Two-Way Left Turn Lane	82’	Y	N
Broadway between H St and K St	4	Two-Way Left Turn Lane	80’	Y	N
Broadway between K St and L St	4	Two-Way Left Turn Lane	80’	Y	N
Broadway south of L St	4	Raised Median	82’	Y	N
4th Ave between SR-54 and C St	4	Raised Median Extended NB/SB RT Lanes	90’	N	N
4th Ave between C St and E St	4	N	64’	Y	N
4th Ave between E St and H St	4	Two-Way Left Turn Lane	64’	N	N
4th Ave between H St and L St	4	N	63’	Y	N
3rd Ave between C St and E St	4	N	64’	Y	N
3rd Ave between E St and F St	2	N	62’	Y	N
3rd Ave between F St and Madrona St	4	Raised Median	101’	Y	N
3rd Ave between Madrona St and G St	4	N	72’	Y	N
3rd Ave between G St and H St	4	Two-Way Left Turn Lane	66’	Y	N
3rd Ave between H St and L St	4	Two-Way Left Turn Lane	63’	N	N
3rd Ave south of L St	4	Two-Way Left Turn Lane	61’	N	N

E STREET CORRIDOR

1. E St/Bay Blvd -I-5 SB Ramps	2. E St/I-5 NB Ramps	3. E St/Woodlawn Ave	4. E St/Broadway
			
5. E St/5th Ave	**6. E St/4th Ave**	**7. E St/3rd Ave**	**8. E St/2nd Ave**
			
9. E St/1st Ave	**10. E St/Flower St**	**11.Bonita Glen Dr/Bonita Rd**	
			

Legend:

Traffic Signal

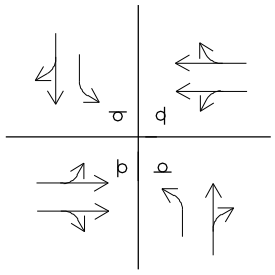
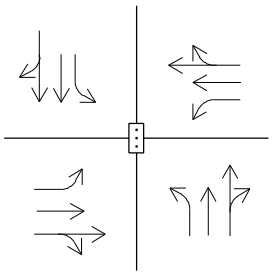
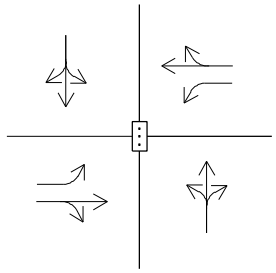
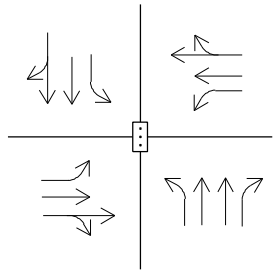
over *Overlap Phase*

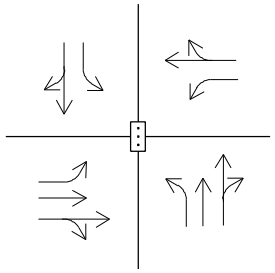
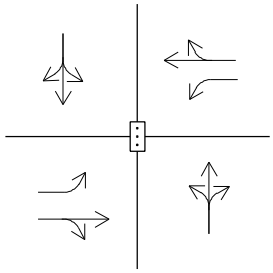
Figure 3-1

KIMLEY-HORN and ASSOCIATES

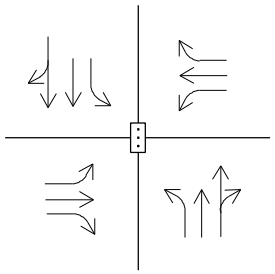
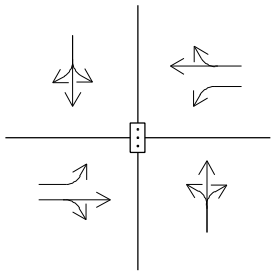
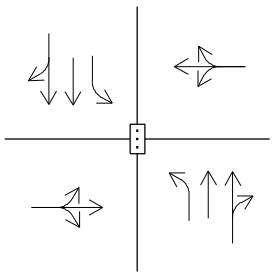
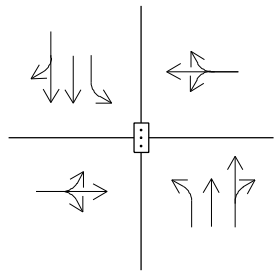
Existing Intersection Geometrics

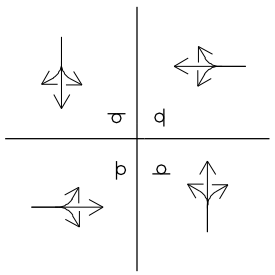
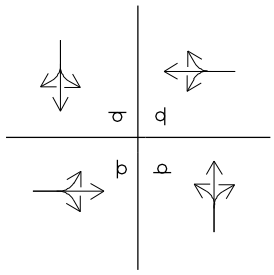
F STREET CORRIDOR

12. F St/Bay Blvd	13. F St/Broadway	14. F St/5th St	15. F St/4th Ave
			

16. F St/3rd Ave	17. F St/2nd Ave
	

G STREET CORRIDOR

18. G St/Broadway	19. G St/5th Ave	20. G St/4th Ave	21. G St/3rd Ave
			

22. G St/2nd Ave	23. G St-Peppertree/Hilltop Dr
	

Legend:

Traffic Signal

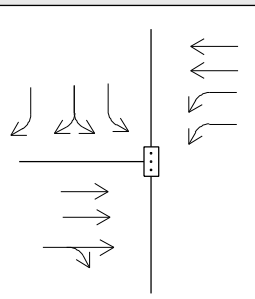
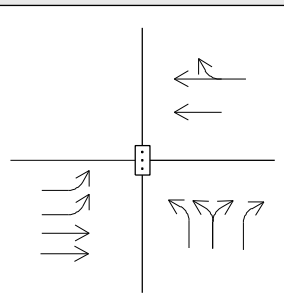
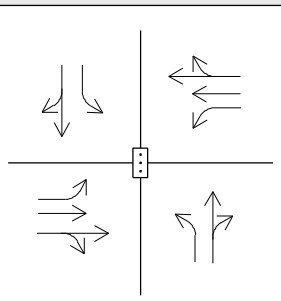
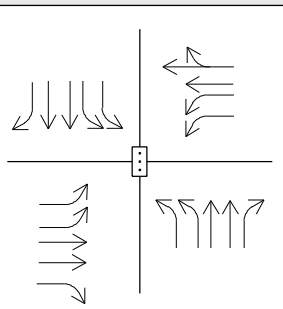
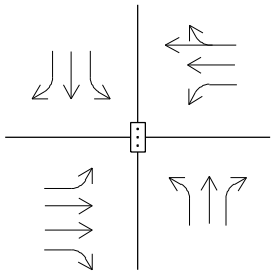
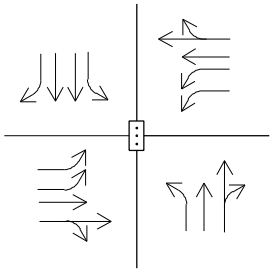
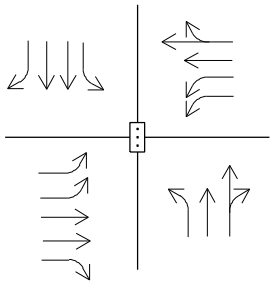
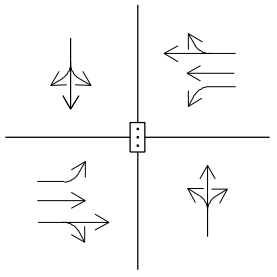
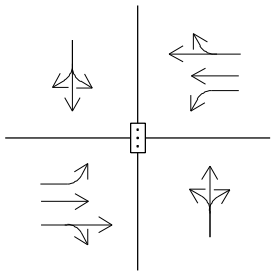
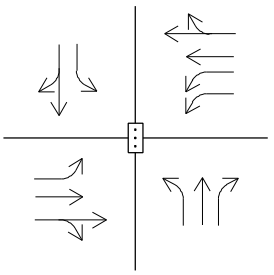
Stop Sign

Figure 3-1.1

KIMLEY-HORN and ASSOCIATES

Existing Intersection Geometrics

H STREET CORRIDOR

24. H St/I-5 SB Ramps	25. H St/I-5 NB Ramp	26. H St/Woodlawn Ave	27. H St/Broadway
			
28. H St/5th Ave	**29. H St/4th Ave**	**30. H St/3rd Ave**	**31. H St/2nd Ave**
			
32. H St/1st Ave	**33. H St/Hilltop Dr**		
			

Legend:

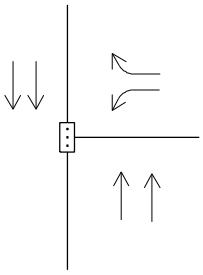
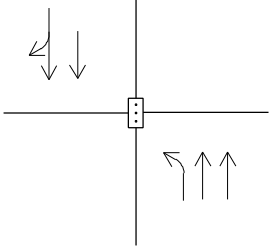
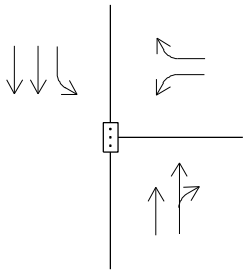
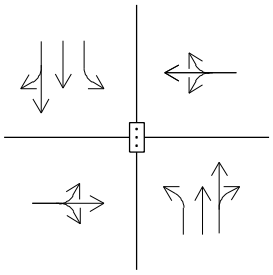
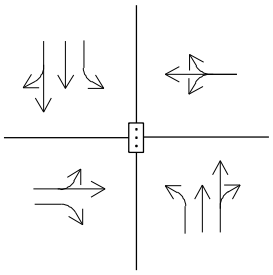
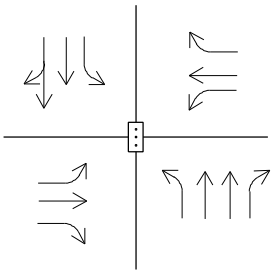
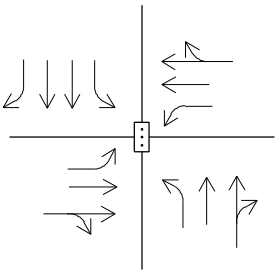
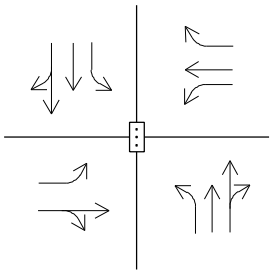
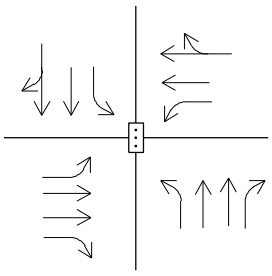
Traffic Signal

Figure 3-1.2

Existing Intersection Geometrics

KIMLEY-HORN and ASSOCIATES

BROADWAY CORRIDOR

34. Broadway/ SR-54 WB Off-Ramp	35. Broadway/ SR-54 EB On-Ramp	36. Broadway/C St	37. Broadway/D St
			
38. Broadway/Flower St	**39. Broadway/I St**	**40. Broadway/J St**	**41. Broadway/K St**
			
42. Broadway/L St			
			

Legend:

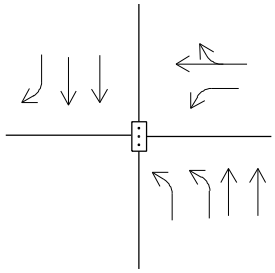
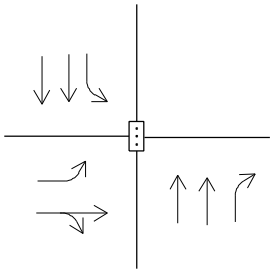
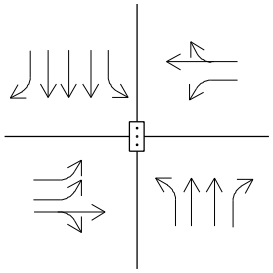
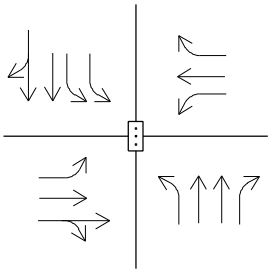
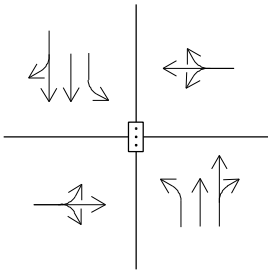
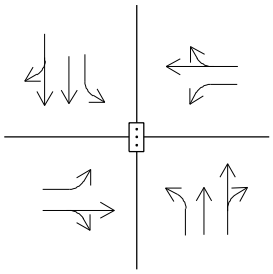
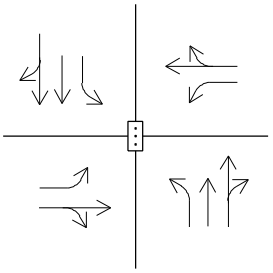
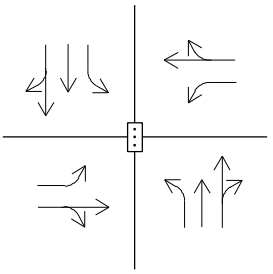
Traffic Signal

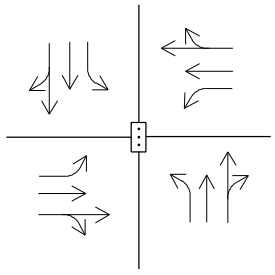
Figure 3-1.3

KIMLEY-HORN and ASSOCIATES

Existing Intersection Geometrics

4TH AVENUE CORRIDOR

43. 4th Ave/SR-54 WB Ramp	44. 4th Ave/SR-54 EB Ramp	45. 4th Ave/Brisbane St	46. 4th Ave/C St
			
47. 4th Ave/D St	**48. 4th Ave/I St**	**49. 4th Ave/J St**	**50. 4th Ave/K St**
			

51. 4th Ave/L St


Legend:

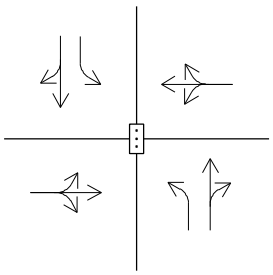
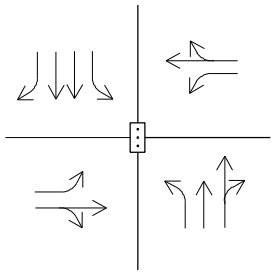
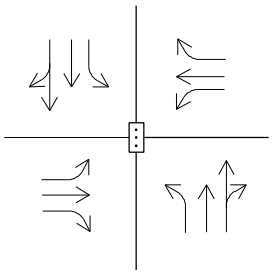
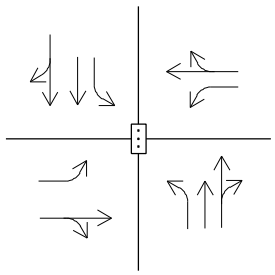
Traffic Signal

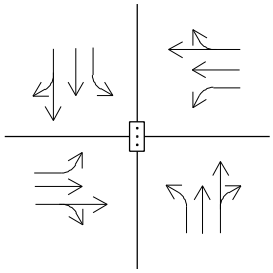
Figure 3-1.4

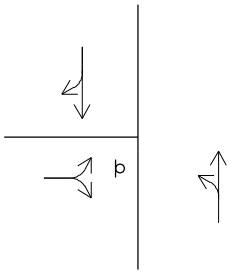
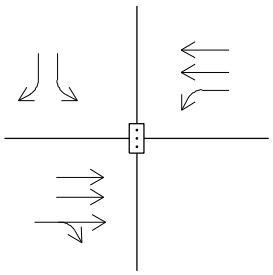
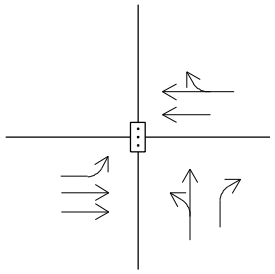
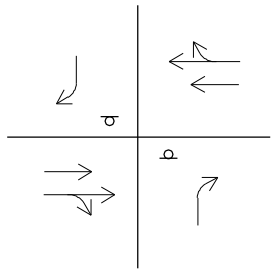
Existing Intersection Geometrics

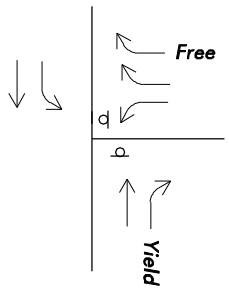
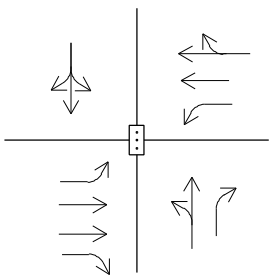
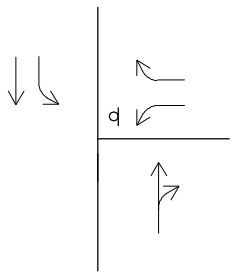
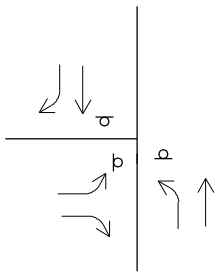
KIMLEY-HORN and ASSOCIATES

3RD AVENUE CORRIDOR

52. 3rd Ave/Davidson Dr	53. 3rd Ave/I St	54. 3rd Ave/J St	55. 3rd Ave/K St
			

56. 3rd Ave/L St


57. 2nd Ave/D St	58. I-5 SB Ramps/J St	59. I-5 NB Ramps/J St	60. Woodlawn/J St
			

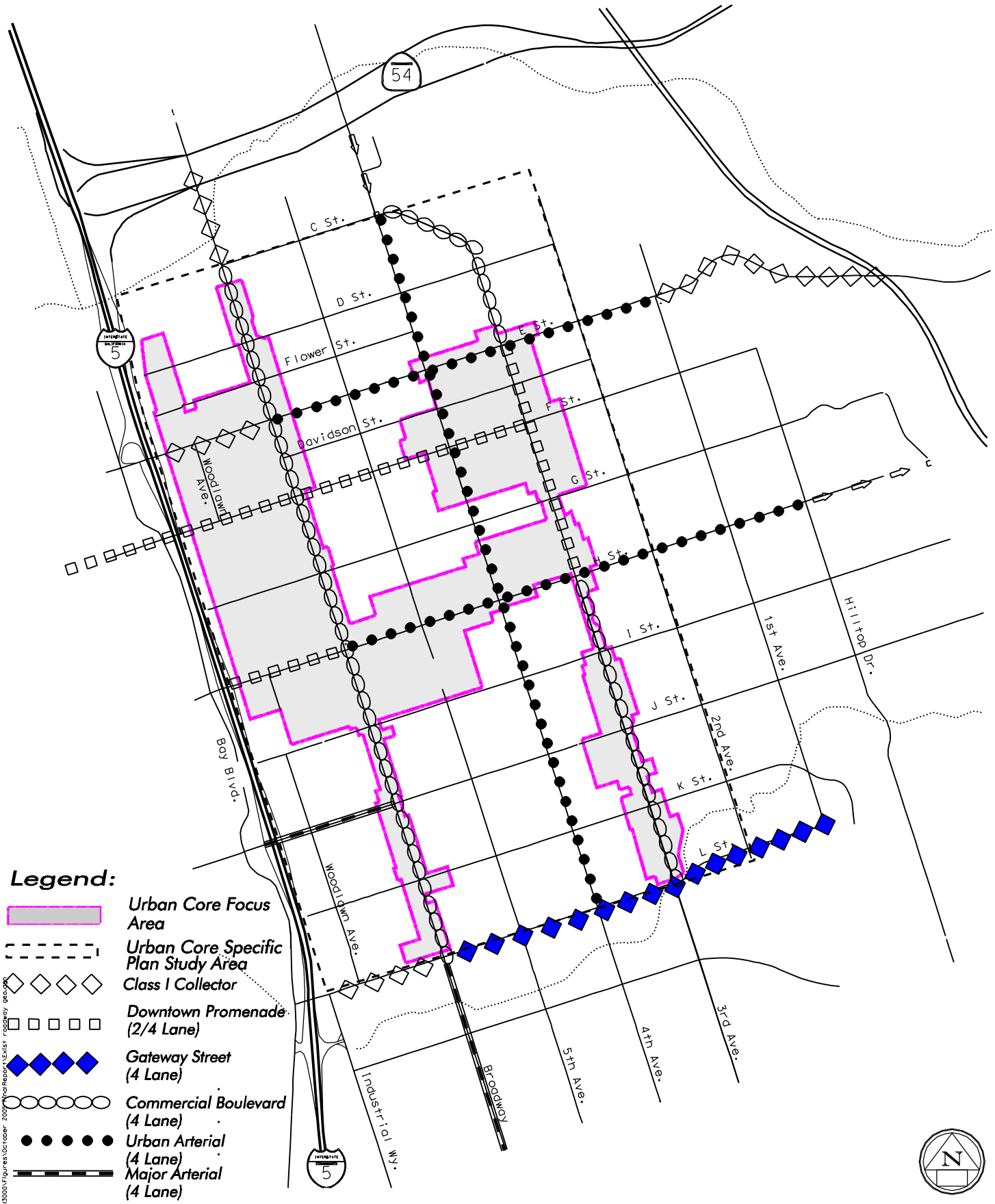
61. Bay Blvd/L St	62. Industrial Blvd/L St	63. Bay Blvd/I-5 SB Ramps	64. Industrial Blvd/I-5 NB Ramps
* 			

* *Intersection analyzed with NB/SB free-flow movement and WB being stop-controlled.*

Legend:

Traffic Signal

Stop Sign



K:\09541\3000\Figures\October 2007\MndRepor\Exist roadway geo.dgn
PLOTTED : 10/7/2005

KIMLEY-HORN and ASSOCIATES

Figure 3-2

Existing Roadway Geometrics

Traffic Volumes

Existing a.m. (7:00 a.m. to 9:00 a.m.) and p.m. (4:00 p.m. to 6:00 p.m.) peak-hour turning movement counts were conducted by Southland Car Counters, Turning Point Traffic Service, and Traffic Data Service Southwest at the study intersections. These counts were taken during several different time periods in 2004/2005 and are summarized in **Table 3-2**. The existing ADT for the roadway segments were obtained from the City of Chula Vista. Dates of these counts ranged between 1995 and 2003 and are summarized in **Table 3-3**.

TABLE 3-2
INTERSECTION SEGMENT COUNT DATA SOURCE

	INTERSECTION	SOURCE	DATE
1	Bay Blvd-I-5 SB Ramp @ E St	TPTS	11/16/04
2	I-5 NB Ramp @ E St	TPTS	11/23/04
3	Woodlawn Ave @ E St	SCC	6/16/04
4	Broadway @ E St	SCC	6/22/04
5	5th Ave @ E St	SCC	6/23/04
6	4th Ave @ E St	SCC	6/22/04
7	3rd Ave @ E St	SCC	6/23/04
8	2nd Ave @ E St	SCC	6/23/04
9	1st Ave @ E St	SCC	6/23/04
10	Flower St @ E St	SCC	6/23/04
11	Bonita Glen Dr @ Bonita Rd	SCC	6/23/04
12	Bay Blvd @ F St	TPTS	11/18/04
13	Broadway @ F St	SCC	6/16/04
14	5th Ave @ F St	SCC	6/24/04
15	4th Ave @ F St	SCC	6/23/04
16	3rd Ave @ F St	SCC	6/16/04
17	2nd Ave @ F St	TDSS	4/20/05
18	Broadway @ G St	SCC	6/22/04
19	5th Ave @ G St	SCC	6/16/04
20	4th Ave @ G St	SCC	6/16/04
21	3rd Ave @ G St	SCC	6/22/04
22	2nd Ave @ G St	TDSS	4/20/05
23	Hilltop Dr @ G St	TDSS	4/20/05
24	I-5 SB Ramp @ H St	TPTS	11/18/04
25	I-5 NB Ramp @ H St	SCC	11/14/04
26	Woodlawn Ave @ H St	SCC	1/19/04
27	Broadway @ H St	SCC	1/15/04
28	5th Ave @ H St	SCC	1/15/04
29	4th Ave @ H St	SCC	1/14/04
30	3rd Ave @ H St	SCC	1/14/04
31	2nd Ave @ H St	SCC	1/14/04
32	1st Ave @ H St	SCC	1/15/04

Notes:
SCC = Southland Car Counters; TPTS = Turning Point Traffic Services, TDSS = Traffic Data Service Southwest

TABLE 3-2
INTERSECTION SEGMENT COUNT DATA SOURCE (Continued)

	INTERSECTION	SOURCE	DATE
33	Hilltop Dr @ H St	SCC	1/15/04
34	Broadway @ SR-54 WB Ramp	TDSS	4/20/05
35	Broadway @ SR-54 EB Ramp	TDSS	4/20/05
36	Broadway @ C St	SCC	6/16/04
37	Broadway @ D Street	SCC	6/16/04
38	Broadway @ Flower St	SCC	6/16/04
39	Broadway @ I St	TDSS	4/20/05
40	Broadway @ J St	TDSS	3/30/05
41	Broadway @ K St	TDSS	4/20/05
42	Broadway @ L St	TDSS	4/20/05
43	4th Ave @ SR-54 WB Ramp	TDSS	4/20/05
44	4th Ave @ SR-54 EB Ramp	TDSS	4/20/05
45	4th Ave @ Brisbane St	SCC	6/16/04
46	4th Ave @ C St	SCC	6/16/04
47	4th Ave @ D St	SCC	6/16/04
48	4th Ave @ I St	SCC	6/23/04
49	4th Ave @ J St	SCC	6/16/04
50	4th Ave @ K St	SCC	6/16/04
51	4th Ave @ L St	SCC	6/16/04
52	3rd Ave @ Davidson St	SCC	6/23/04
53	3rd Ave @ I St	SCC	6/23/04
54	3rd Ave @ J St	SCC	6/16/04
55	3rd Ave @ K St	SCC	6/16/04
56	3rd Ave @ L St	SCC	6/16/04
57	2nd Ave @ D St	TDSS	5/3/05
58	J St @ I-5 SB Ramp	TPTS	11/16/04
59	J St @ I-5 NB Ramp	TPTS	11/16/04
60	Woodlawn Ave @ J St	TDSS	4/20/05
61	L St @ Bay Blvd	TPTS	11/17/04
62	L St @ Industrial Blvd	TPTS	11/17/04
63	Bay Blvd @ I-5 SB Ramp	TPTS	11/17/04
64	Industrial Blvd @ I-5 NB Ramp	TPTS	11/17/04

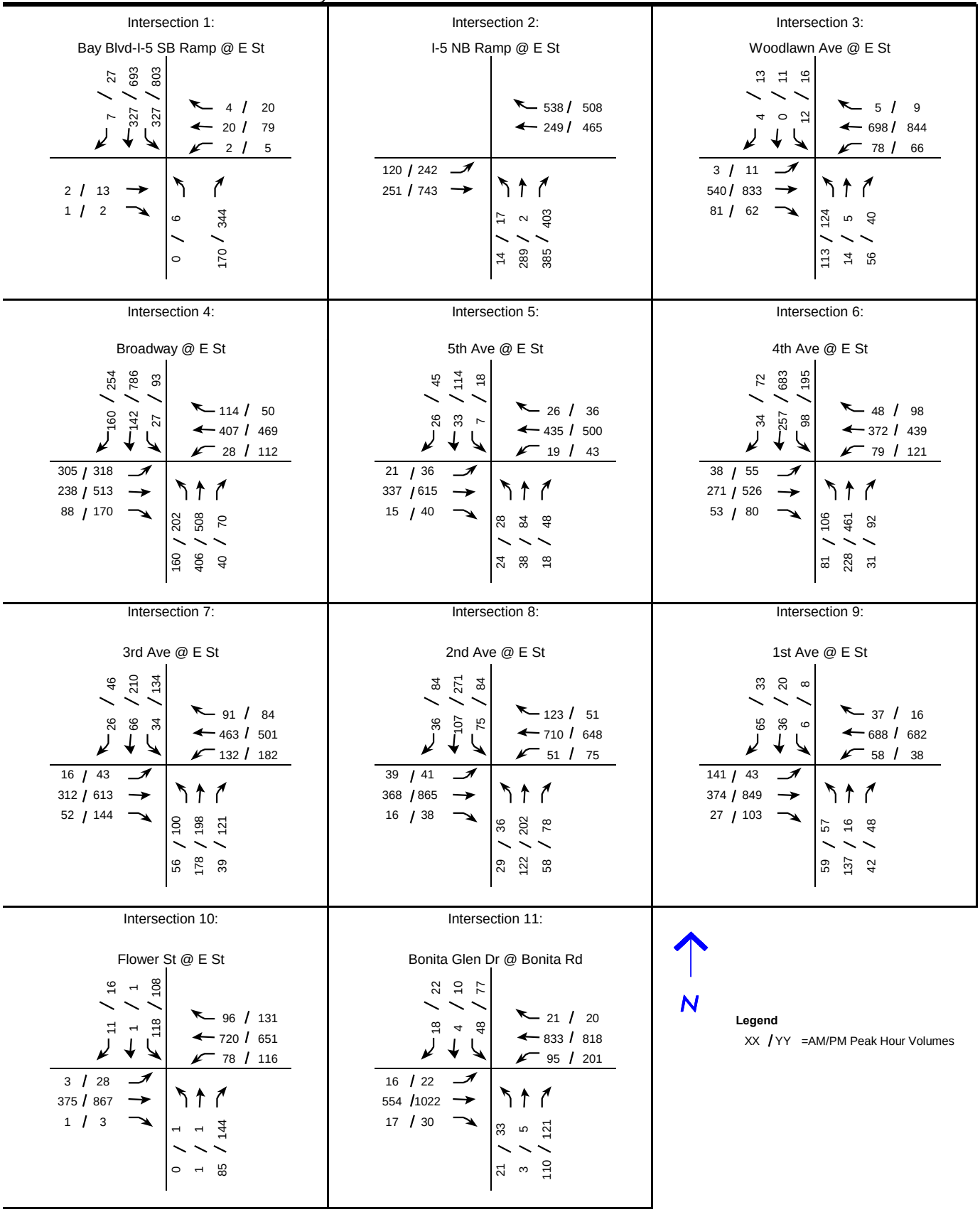
Notes:
SCC = Southland Car Counters; TPTS = Turning Point Traffic Services, TDSS = Traffic Data Service Southwest

TABLE 3-3
ROADWAY SEGMENT COUNT DATA SOURCE

STREET	SEGMENT	COUNT SOURCE	COUNT DATE
E Street	I-5 - Woodlawn Avenue	City of Chula Vista	2003
	Woodlawn Avenue - Broadway	City of Chula Vista	2003
	Broadway - First Avenue	City of Chula Vista	2002/2003
F Street	Bay Boulevard - Broadway	City of Chula Vista	2000
	Broadway - 3rd Avenue	City of Chula Vista	1996/2000/2001
H Street	I-5 - Broadway	City of Chula Vista	2002
	Broadway - Hilltop Drive	City of Chula Vista	2002/2003
J Street	Bay Boulevard - Broadway	City of Chula Vista	2002/2003
L Street	I-5 - Broadway	City of Chula Vista	2002/2003
Woodlawn Avenue	E Street – F Street	City of Chula Vista	2002/2003
	G Street – H Street	City of Chula Vista	2002/2003
Broadway	C Street - E Street	City of Chula Vista	1997
	E Street - H Street	City of Chula Vista	1996/1997/2003
	H Street - L Street	City of Chula Vista	1997/2003
4th Avenue	C Street - E Street	City of Chula Vista	2000
	E Street - H Street	City of Chula Vista	1996/2002
	H Street - L Street	City of Chula Vista	1995/1996/2000/2003
3rd Avenue	C Street - E Street	City of Chula Vista	1995/1996
	E Street - H Street	City of Chula Vista	2002
	H Street - L Street	City of Chula Vista	2002/2003

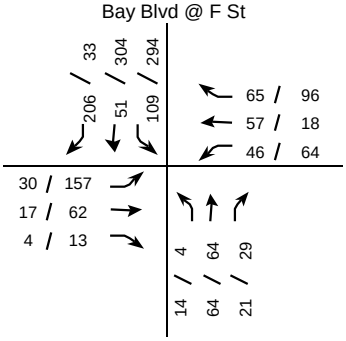
Figures 3-3 to **3-3.5** illustrate the existing peak-hour traffic volumes at the study intersections and **Figure 3-4** illustrates the existing ADT volumes along the roadway segments.

Appendix B contains the existing peak-hour traffic volume data at the study intersections and the existing ADT volume data for the roadway segments.


Intersection 1:
Bay Blvd-I-5 SB Ramp @ E St
27 / 693 / 803
7 / 327 / 327
4 / 20
20 / 79
2 / 5
2 / 13
1 / 2
0 / 6 / 344
170
Intersection 2:
I-5 NB Ramp @ E St
538 / 508
249 / 465
120 / 242
251 / 743
14 / 17 / 2 / 403
289 / 385
Intersection 3:
Woodlawn Ave @ E St
13 / 11 / 16
4 / 0 / 12
5 / 9
698 / 844
78 / 66
3 / 11
540 / 833
81 / 62
113 / 124 / 5 / 40
14 / 56
Intersection 4:
Broadway @ E St
254 / 786 / 93
160 / 142 / 27
114 / 50
407 / 469
28 / 112
305 / 318
238 / 513
88 / 170
160 / 202 / 508 / 70
406 / 40
Intersection 5:
5th Ave @ E St
45 / 114 / 18
26 / 33 / 7
26 / 36
435 / 500
19 / 43
21 / 36
337 / 615
15 / 40
24 / 28 / 84 / 48
38 / 18
Intersection 6:
4th Ave @ E St
72 / 683 / 195
34 / 257 / 98
48 / 98
372 / 439
79 / 121
38 / 55
271 / 526
53 / 80
81 / 106 / 461 / 92
228 / 31
Intersection 7:
3rd Ave @ E St
46 / 210 / 134
26 / 66 / 34
91 / 84
463 / 501
132 / 182
16 / 43
312 / 613
52 / 144
56 / 100 / 198 / 121
178 / 39
Intersection 8:
2nd Ave @ E St
84 / 271 / 84
36 / 107 / 75
123 / 51
710 / 648
51 / 75
39 / 41
368 / 865
16 / 38
29 / 36 / 202 / 78
122 / 58
Intersection 9:
1st Ave @ E St
33 / 20 / 8
65 / 36 / 6
37 / 16
688 / 682
58 / 38
141 / 43
374 / 849
27 / 103
59 / 57 / 16 / 48
137 / 42
Intersection 10:
Flower St @ E St
16 / 1 / 108
11 / 1 / 118
96 / 131
720 / 651
78 / 116
3 / 28
375 / 867
1 / 3
0 / 1 / 1 / 144
1 / 85
Intersection 11:
Bonita Glen Dr @ Bonita Rd
22 / 10 / 77
18 / 4 / 48
21 / 20
833 / 818
95 / 201
16 / 22
554 / 1022
17 / 30
21 / 33 / 5 / 121
3 / 110
N
Legend
XX / YY =AM/PM Peak Hour Volumes

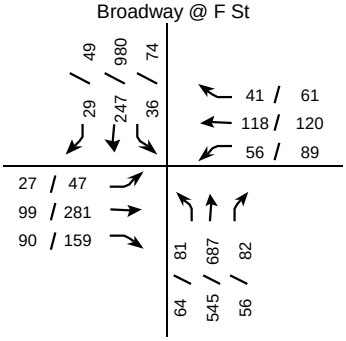
Intersection 12:

Bay Blvd @ F St



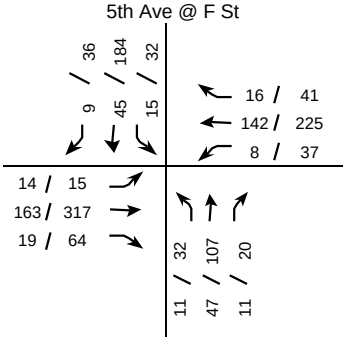
Intersection 13:

Broadway @ F St



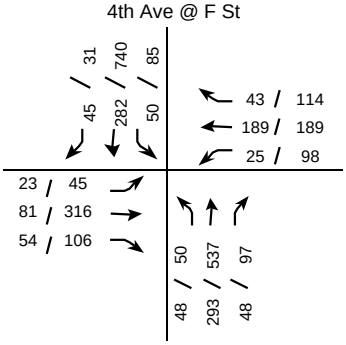
Intersection 14:

5th Ave @ F St



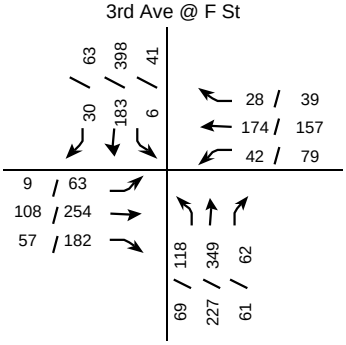
Intersection 15:

4th Ave @ F St



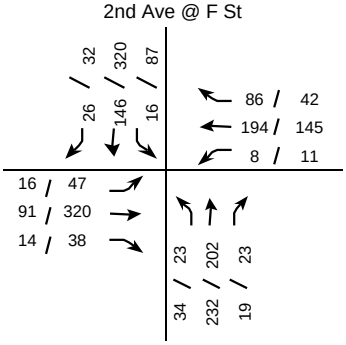
Intersection 16:

3rd Ave @ F St



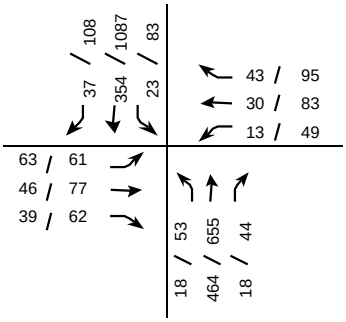
Intersection 17:

2nd Ave @ F St



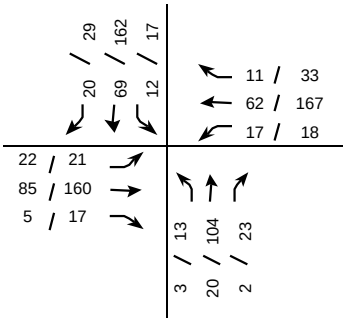
Intersection 18:

Broadway @ G St



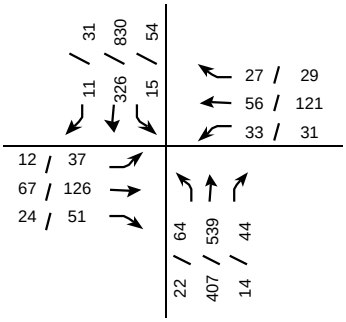
Intersection 19:

5th Ave @ G St



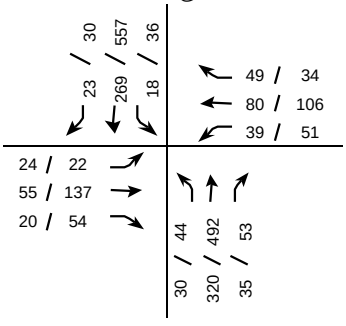
Intersection 20:

4th Ave @ G St



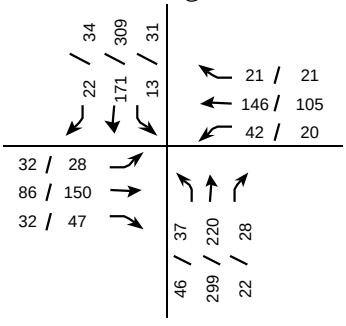
Intersection 21:

3rd Ave @ G St



Intersection 22:

2nd Ave @ G St

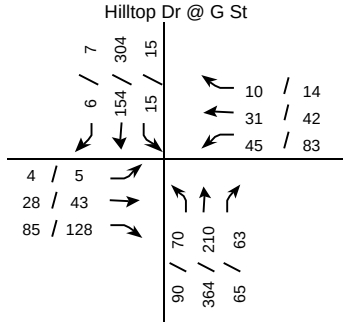


Legend

XX / YY =AM/PM Peak Hour Volumes

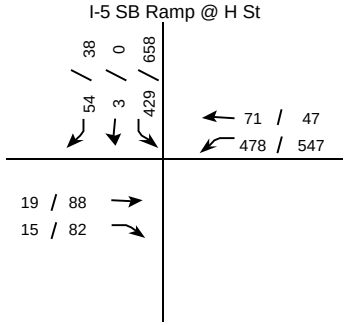
Intersection 23:

Hilltop Dr @ G St



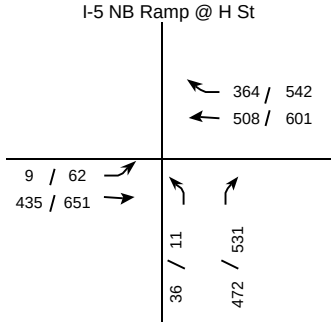
Intersection 24:

I-5 SB Ramp @ H St



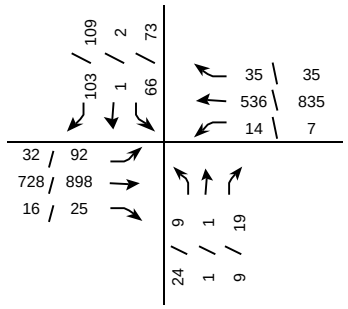
Intersection 25:

I-5 NB Ramp @ H St



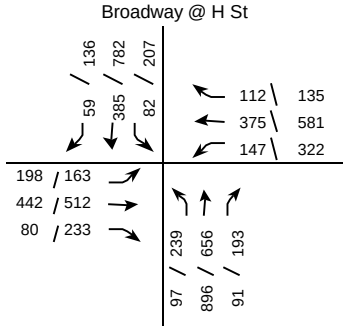
Intersection 26:

Woodlawn Ave @ H St



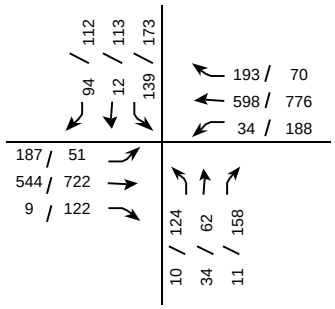
Intersection 27:

Broadway @ H St



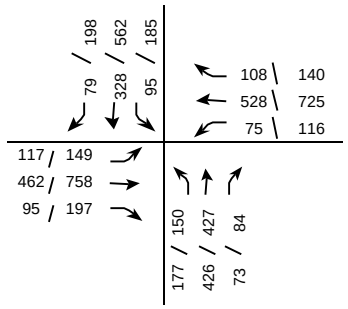
Intersection 28:

5th Ave @ H St



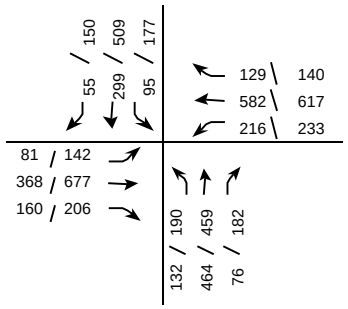
Intersection 29:

4th Ave @ H St



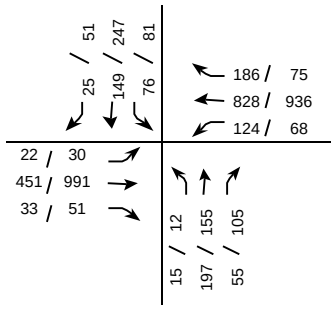
Intersection 30:

3rd Ave @ H St



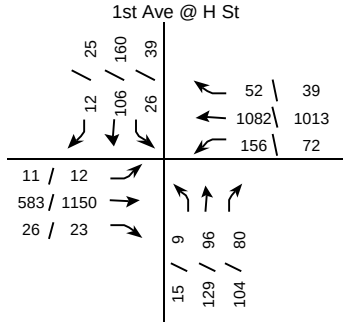
Intersection 31:

2nd Ave @ H St



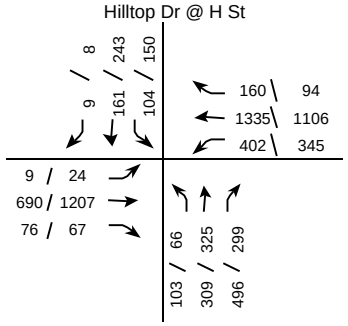
Intersection 32:

1st Ave @ H St



Intersection 33:

Hilltop Dr @ H St



Legend

XX / YY =AM/PM Peak Hour Volumes

Figure 3-3.2

Existing Peak-Hour Traffic Volumes

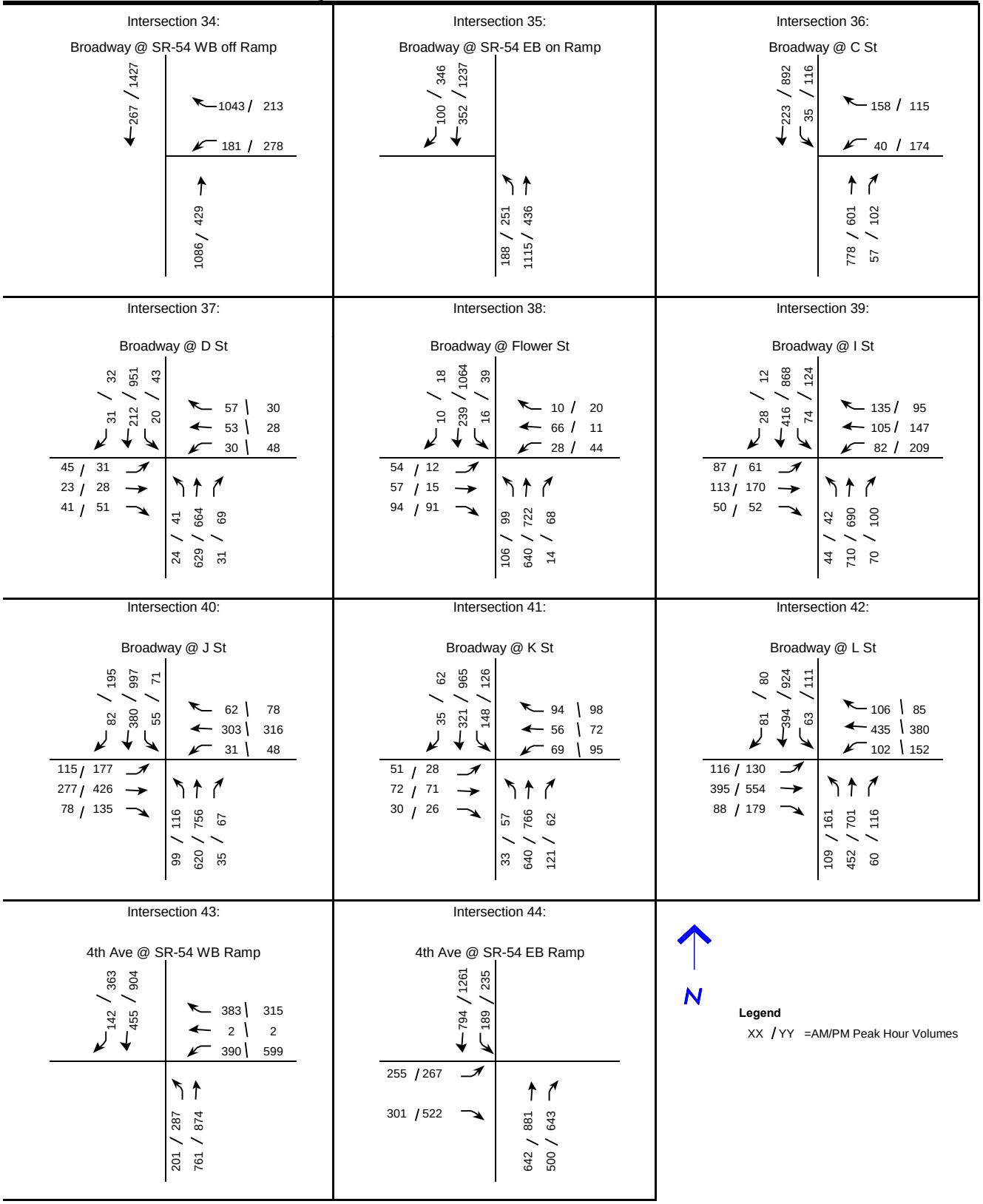


Figure 3-3.3
Existing Peak-Hour Traffic Volumes

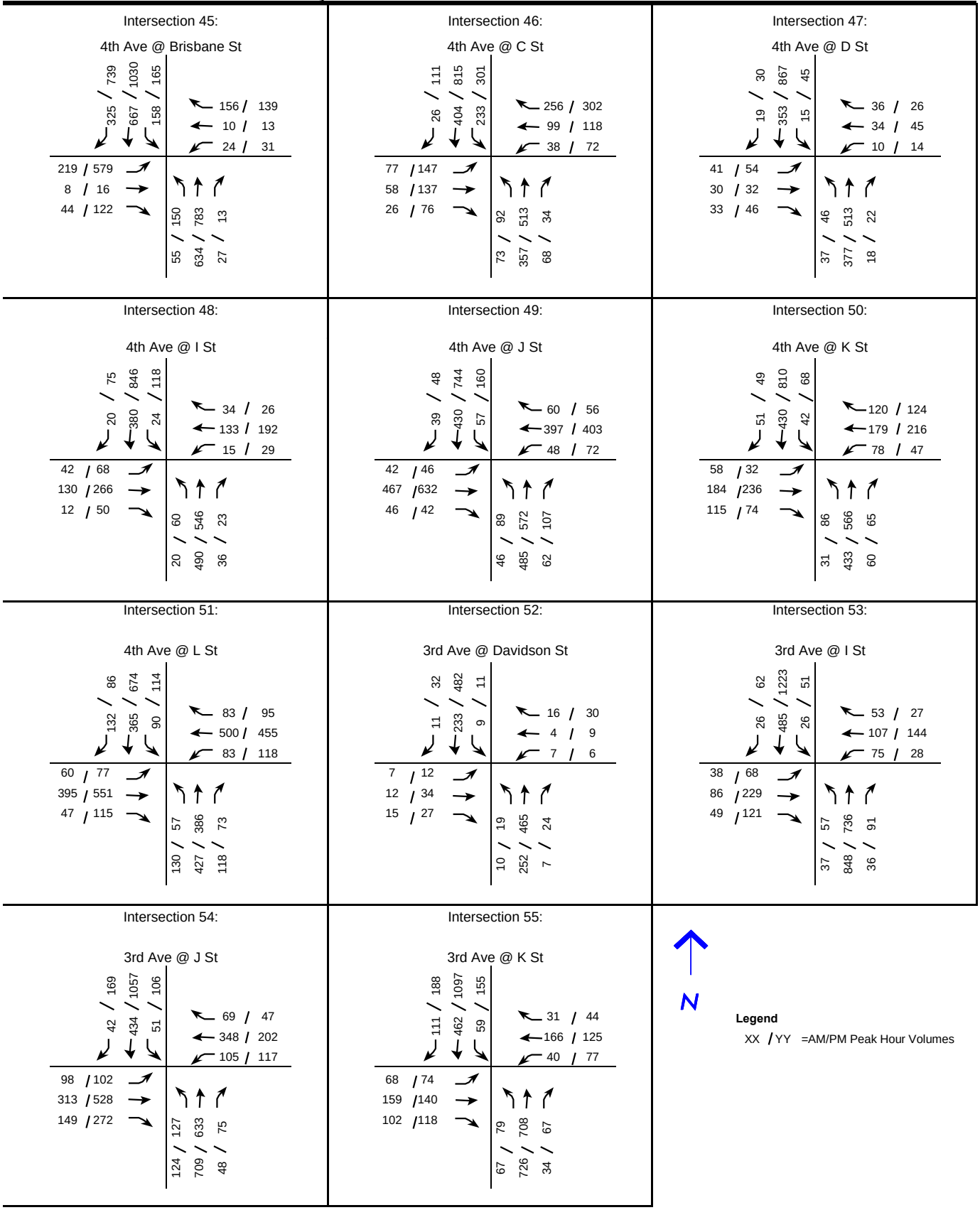
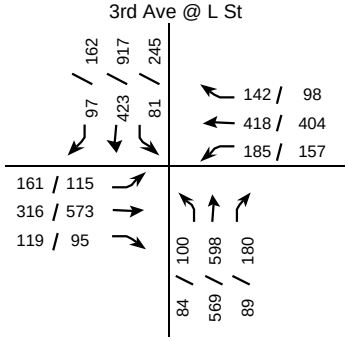


Figure 3-3.4
Existing Peak-Hour Traffic Volumes

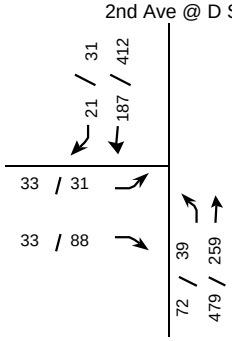
Intersection 56:

3rd Ave @ L St



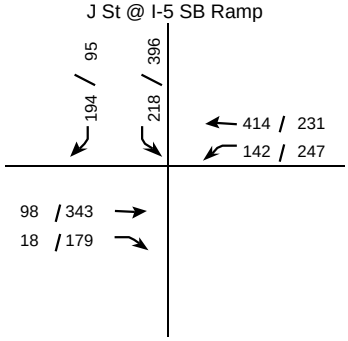
Intersection 57:

2nd Ave @ D St



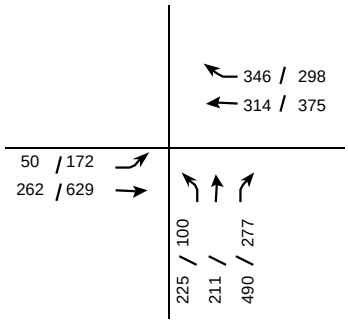
Intersection 58:

J St @ I-5 SB Ramp



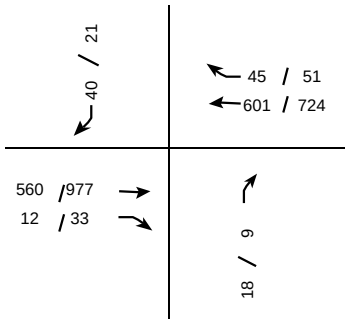
Intersection 59:

J St @ I-5 NB Ramp



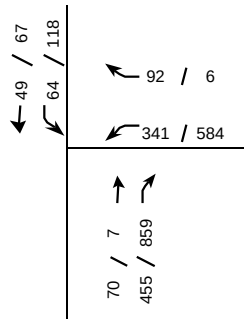
Intersection 60:

Woodlawn Ave @ J St



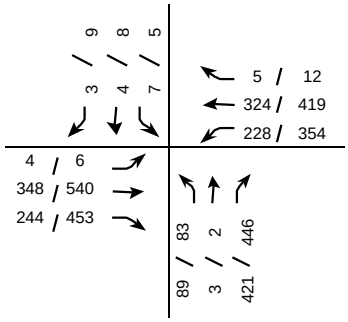
Intersection 61:

L St @ Bay Blvd



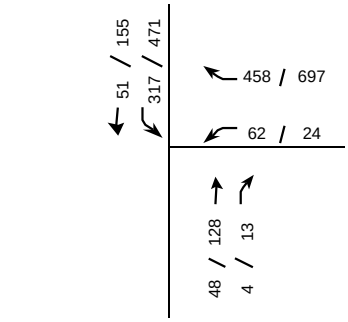
Intersection 62:

L St @ Industrial Blvd



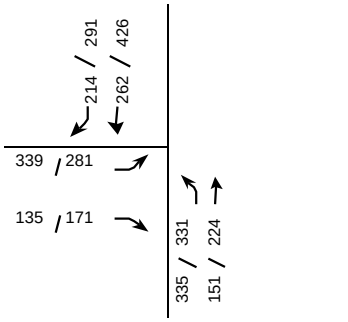
Intersection 63:

Bay Blvd @ I-5 SB Ramp



Intersection 64:

Industrial Blvd @ I-5 NB Ramp



Legend

XX / YY =AM/PM Peak Hour Volumes

Figure 3-3.5

Existing Peak-Hour Traffic Volumes

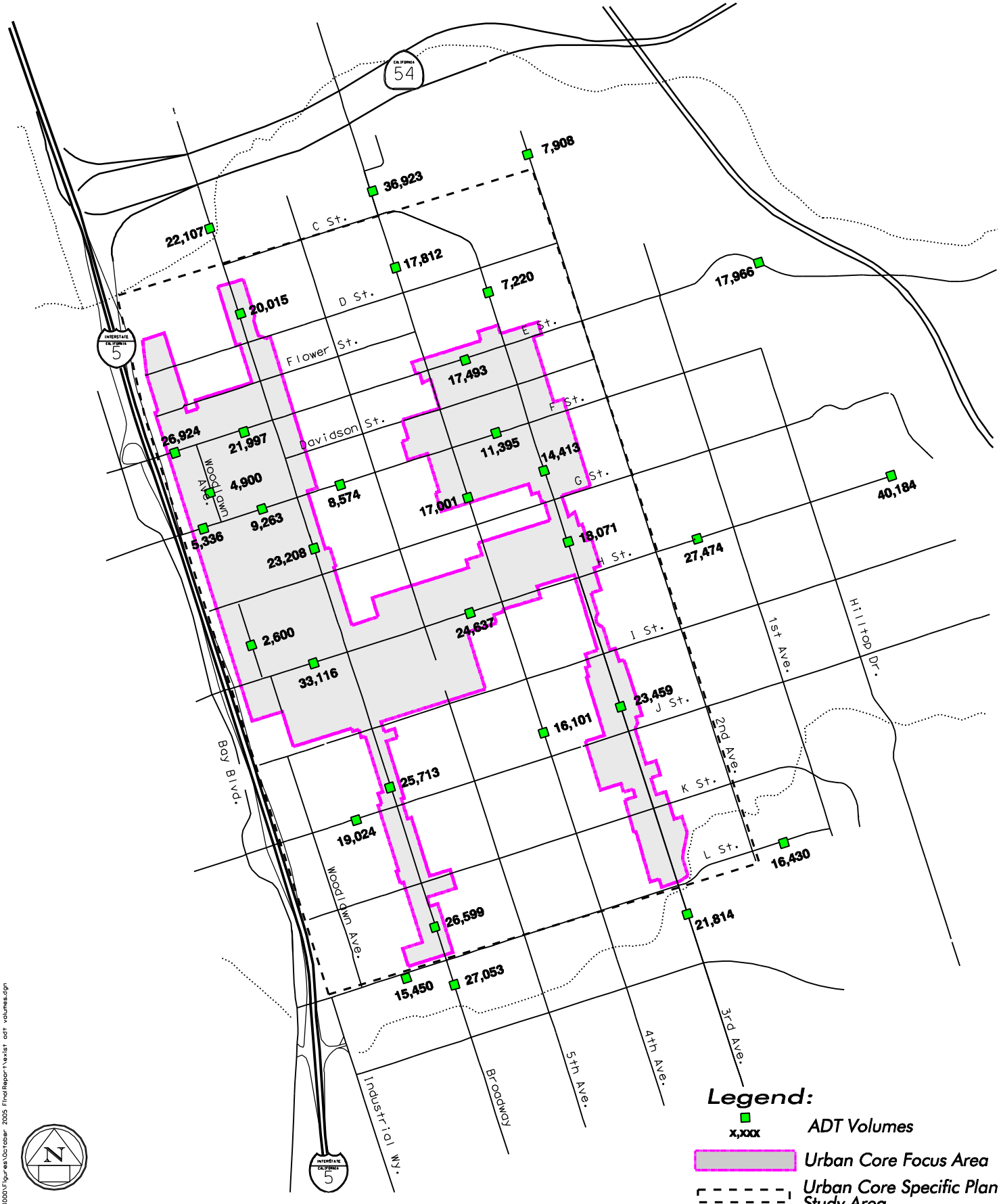


Figure 3-4

Existing ADT Volumes

KIMLEY-HORN and ASSOCIATES

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Intersection Analysis

Table 3-4 displays the LOS analysis results for the study intersections under Existing Conditions. As shown in this table, all study intersections operate at LOS D or better during both peak periods, except for the following intersections:

- #34 Broadway @ SR-54 WB Ramp (LOS F – AM Peak);
- #61 L Street @ Bay Boulevard (LOS F – PM Peak); and
- #63 Bay Boulevard @ I-5 SB Ramp (LOS E – PM Peak).

It should be noted that the E Street and H Street intersections at the I-5 interchange (including Woodlawn Avenue) do not take into account the queues associated with the at-grade trolley crossings at both of these locations. As noted in the methodology section, the E Street and H Street intersections affected by the trolley crossing would experience additional delay along the arterial and at adjacent intersections. Additional delays would be between 17 and 40 seconds per vehicle (depending on the direction and time of day) and drop the LOS by at least one grade.

Appendix C contains the peak-hour intersections LOS calculation worksheets.

Roadway Segment Analysis

Table 3-5 summarizes the existing condition LOS analysis for the roadway segments located in the Urban Core. The existing volume is compared to the acceptable volume as defined in the City of Chula Vista's General Plan. Roadway segments that are part of the Urban Core Circulation Element have an acceptable volume equal to LOS D or better. All other roadway segments within the City have an acceptable volume equal to LOS C or better. As shown in this table, all Urban Core roadways currently function at LOS D or better.

Existing Transit Service

The Urban Core of Chula Vista is currently served by 11 Chula Vista Transit (CVT) routes (Routes 701, 702, 703, 704, 705, 706, 707, 708, 709, 711, and 712), two Metropolitan Transit System (MTS) routes (Routes 929 and 932), and the San Diego Trolley's Blue Line. Several CVT transit routes circulate within the Urban Core and Bayfront area; others serve the greater Chula Vista area and provide connections to National City Transit and other transit providers. MTS route 929 runs along 3rd and 4th Avenues through the Urban Core; MTS transit route 932 runs along Broadway. The San Diego Trolley's Blue Line provides service between Qualcomm Stadium and San Ysidro/Tijuana and extends through the Urban Core parallel to and on the east side of I-5, with stations at Bayfront/E Street and H Street. Service is provided seven days a week with service starting around 5:00 a.m. and ending around 12:00 a.m. During the peak periods, service is provided with 7.5-minute headways and 15 minutes during the off-peak periods.

Figure 3-5 displays the existing transit routes in the Urban Core.

TABLE 3-4

EXISTING CONDITIONS

PEAK HOUR INTERSECTION LEVEL OF SERVICE SUMMARY

	INTERSECTION	PEAK HOUR	EXISTING	
			DELAY (a)	LOS (b)
1	Bay Blvd-I-5 SB Ramp @ E St	AM	10.1	B
		PM	16.6	B
2	I-5 NB Ramp @ E St	AM	33.2	C
		PM	18.2	B
3	Woodlawn Ave @ E St	AM	21.7	C
		PM	15.5	B
4	Broadway @ E St	AM	16.9	B
		PM	26.3	C
5	5th Ave @ E St	AM	5.0	A
		PM	6.4	A
6	4th Ave @ E St	AM	13.5	B
		PM	18.8	B
7	3rd Ave @ E St	AM	11.9	B
		PM	15.2	B
8	2nd Ave @ E St	AM	7.3	A
		PM	11.0	B
9	1st Ave @ E St	AM	6.8	A
		PM	5.5	A
10	Flower St @ E St	AM	10.6	B
		PM	12.5	B
11	Bonita Glen Dr @ Bonita Rd	AM	12.1	B
		PM	16.5	B
12	Bay Blvd @ F St	AM	8.8	A
		PM	14.7	B
13	Broadway @ F St	AM	16.5	B
		PM	24.1	C
14	5th Ave @ F St	AM	5.7	A
		PM	8.2	A
15	4th Ave @ F St	AM	13.5	B
		PM	17.7	B
16	3rd Ave @ F St	AM	13.9	B
		PM	19.2	B
17	2nd Ave @ F St	AM	9.7	A
		PM	12.5	B
18	Broadway @ G St	AM	12.3	B
		PM	14.9	B
19	5th Ave @ G St	AM	6.3	A
		PM	7.5	A
20	4th Ave @ G St	AM	8.9	A
		PM	10.3	B

Notes:
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

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TABLE 3-4

EXISTING CONDITIONS

PEAK HOUR INTERSECTION LEVEL OF SERVICE SUMMARY (Continued)

	INTERSECTION	PEAK HOUR	EXISTING	
			DELAY (a)	LOS (b)
21	3rd Ave @ G St	AM	8.6	A
		PM	9.2	A
22	2nd Ave @ G St	AM	14.1	B
		PM	16.3	C
23	Hilltop Dr @ G St	AM	16.7	C
		PM	14.4	B
24	I-5 SB Ramp @ H St	AM	28.8	C
		PM	21.1	C
25	I-5 NB Ramp @ H St	AM	12.7	B
		PM	14.8	B
26	Woodlawn Ave @ H St	AM	38.0	D
		PM	22.3	C
27	Broadway @ H St	AM	25.7	C
		PM	27.1	C
28	5th Ave @ H St	AM	10.8	B
		PM	11.3	B
29	4th Ave @ H St	AM	22.1	C
		PM	29.2	C
30	3rd Ave @ H St	AM	19.3	B
		PM	23.8	C
31	2nd Ave @ H St	AM	8.4	A
		PM	11.5	B
32	1st Ave @ H St	AM	7.6	A
		PM	8.2	A
33	Hilltop Dr @ H St	AM	32.2	C
		PM	41.3	D
34	Broadway @ SR-54 WB Ramp	AM	82.9	**F**
		PM	11.8	B
35	Broadway @ SR-54 EB Ramp	AM	3.3	A
		PM	6.3	A
36	Broadway @ C St	AM	18.1	B
		PM	15.1	B
37	Broadway @ D Street	AM	9.2	A
		PM	10.2	B
38	Broadway @ Flower St	AM	11.5	B
		PM	14.0	B
39	Broadway @ I St	AM	16.3	B
		PM	17.3	B
40	Broadway @ J St	AM	13.6	B
		PM	18.6	B

Notes:

Bold values indicate intersections operating at LOS E or F.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

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TABLE 3-4

EXISTING CONDITIONS

PEAK HOUR INTERSECTION LEVEL OF SERVICE SUMMARY (Continued)

	INTERSECTION	PEAK HOUR	EXISTING	
			DELAY (a)	LOS (b)
41	Broadway @ K St	AM	11.7	B
		PM	13.2	B
42	Broadway @ L St	AM	15.5	B
		PM	20.4	C
43	4th Ave @ SR-54 WB Ramp	AM	14.7	B
		PM	25.9	C
44	4th Ave @ SR-54 EB Ramp	AM	13.4	B
		PM	27.2	C
45	4th Ave @ Brisbane St	AM	21.5	C
		PM	27.3	C
46	4th Ave @ C St	AM	23.2	C
		PM	31.4	C
47	4th Ave @ D St	AM	9.1	A
		PM	10.5	B
48	4th Ave @ I St	AM	8.8	A
		PM	10.1	B
49	4th Ave @ J St	AM	9.3	A
		PM	15.7	B
50	4th Ave @ K St	AM	8.5	A
		PM	10.1	B
51	4th Ave @ L St	AM	24.6	C
		PM	26.6	C
52	3rd Ave @ Davidson St	AM	9.9	A
		PM	13.2	B
53	3rd Ave @ I St	AM	10.1	B
		PM	12.2	B
54	3rd Ave @ J St	AM	18.8	B
		PM	35.9	D
55	3rd Ave @ K St	AM	9.5	A
		PM	11.0	B
56	3rd Ave @ L St	AM	18.1	B
		PM	27.0	C
57	2nd Ave @ D St	AM	14.9	B
		PM	14.9	B
58	J St @ I-5 SB Ramp	AM	8.9	A
		PM	15.1	B
59	J St @ I-5 NB Ramp	AM	10.6	B
		PM	8.2	A
60	Woodlawn Ave @ J St	AM	11.0	B
		PM	11.9	B

Notes:
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

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TABLE 3-4

EXISTING CONDITIONS

PEAK HOUR INTERSECTION LEVEL OF SERVICE SUMMARY (Continued)

INTERSECTION		PEAK HOUR	EXISTING	
			DELAY (a)	LOS (b)
61	L St @ Bay Blvd	AM	16.8	C
		PM	120.3	**F**
62	L St @ Industrial Blvd	AM	18.9	B
		PM	25.4	C
63	Bay Blvd @ I-5 SB Ramp	AM	22.2	C
		PM	48.6	**E**
64	Industrial Blvd @ I-5 NB Ramp	AM	15.4	C
		PM	17.7	C

Notes:
Bold values indicate intersections operating at LOS E or F.
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

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TABLE 3-5

EXISTING CONDITIONS ROADWAY SEGMENT LEVEL OF SERVICE SUMMARY

STREET	SEGMENT	STREET CLASSIFICATION (b)	DAILY TRAFFIC VOLUME	ACCEPTABLE VOLUME	LOS E CAPACITY	VOLUME TO CAPACITY (V/C)	DAILY SEGMENT LOS
E Street	I-5 - Woodlawn Avenue	4 Lanes Gateway Street	26,924	43,200	48,000	0.56 (b)	A
	Woodlawn Avenue - Broadway	4 Lanes Gateway Street	21,997	43,200	48,000	0.46 (b)	A
	Broadway - 1st Avenue	4 Lanes Urban Arterial	17,493	37,800	42,000	0.42 (b)	A
	1st Avenue - I-805	4 Lanes Gateway Street	17,966	43,200	48,000	0.37 (b)	A
F Street	Bay Boulevard - Woodlawn Avenue	4 Lanes Downtown Promenade	5,336	33,750	37,500	0.14 (b)	A
	Woodlawn Avenue - Broadway	4 Lanes Downtown Promenade	9,263	33,750	37,500	0.25 (b)	A
	Broadway - 4th Avenue	2 Lanes Downtown Promenade	8,574	14,400	16,000	0.54 (b)	A
	4th Avenue - 3rd Avenue	4 Lanes Downtown Promenade	11,395	33,750	37,500	0.30 (b)	A
H Street	I-5 - Broadway	4 Lanes Gateway Street (c)	33,116	43,200	48,000	0.69 (b)	B
	Broadway - 3rd Avenue	4 Lanes Urban Arterial	24,637	37,800	42,000	0.59 (b)	A
	3rd Avenue - Hilltop Drive	4 Lanes Urban Arterial	27,474	37,800	42,000	0.65 (b)	A
	Hilltop Drive - I-805	4 Lanes Gateway Street (c)	40,184	43,200	48,000	0.84 (b)	D
J Street	Bay Boulevard - Broadway	4 Lanes Major Street	19,024	40,000	37,500	0.51 (b)	A
L Street	I-5 - Broadway	4 Lanes Gateway Street	15,450	43,200	48,000	0.32 (b)	A
	Broadway - Hilltop Drive	4 Lanes Class I Collector	16,430	22,000	27,500	0.60 (b)	A
Woodlawn Avenue	E Street - F Street	2 Lanes Downtown Promenade	4,900	14,400	16,000	0.31 (b)	A
	G Street - H Street	2 Lanes Downtown Promenade	2,600	14,400	16,000	0.16 (b)	A
Broadway	SR-54 - C Street	4 Lanes Gateway Street	22,107	43,200	48,000	0.46 (b)	A
	C Street - E Street	4 Lanes Commercial Boulevard	20,015	33,750	37,500	0.53 (b)	A
	E Street - H Street	4 Lanes Commercial Boulevard	23,208	33,750	37,500	0.62 (b)	B
	H Street - K Street	4 Lanes Commercial Boulevard	25,713	33,750	37,500	0.69 (b)	B
	K Street - L Street	4 Lanes Commercial Boulevard	26,599	33,750	37,500	0.71 (b)	C
	South of L Street	4 Lanes Major Street	27,053	40,000	37,500	0.72	C
4th Avenue	SR-54 - C Street	4 Lanes Gateway Street (c)	36,923	43,200	48,000	0.77 (b)	C
	C Street - E Street	4 Lanes Urban Arterial	17,812	37,800	42,000	0.42 (b)	A
	E Street - H Street	4 Lanes Urban Arterial	17,001	37,800	42,000	0.40 (b)	A
	H Street - L Street	4 Lanes Urban Arterial	16,101	37,800	42,000	0.38 (b)	A
3rd Avenue	C Street - E Street	4 Lanes Commercial Boulevard	7,220	33,750	37,500	0.19 (b)	A
	E Street - G Street	4 Lanes Downtown Promenade	14,413	33,750	37,500	0.38 (b)	A
	G Street - H Street	4 Lanes Downtown Promenade	18,071	33,750	37,500	0.48 (b)	A
	H Street - L Street	4 Lanes Commercial Boulevard	23,459	33,750	37,500	0.63 (b)	B
	South of L Street	4 Lanes Class I Collector	21,814	22,000	27,500	0.79	C

NOTE: Values in **bold** indicate roadway segments exceeding the City's minimum performance standard.

(a) Street classification is based on the standards provided in the 2005 Chula Vista General Plan, but will be analyzed with existing number of lanes for each respective roadway segment.

(b) This roadway segment is part of the Urban Core Circulation Element.

(c) This roadway segment is classified as a 6-lane roadway, but is assumed to function as a 4-lane roadway for this scenario.

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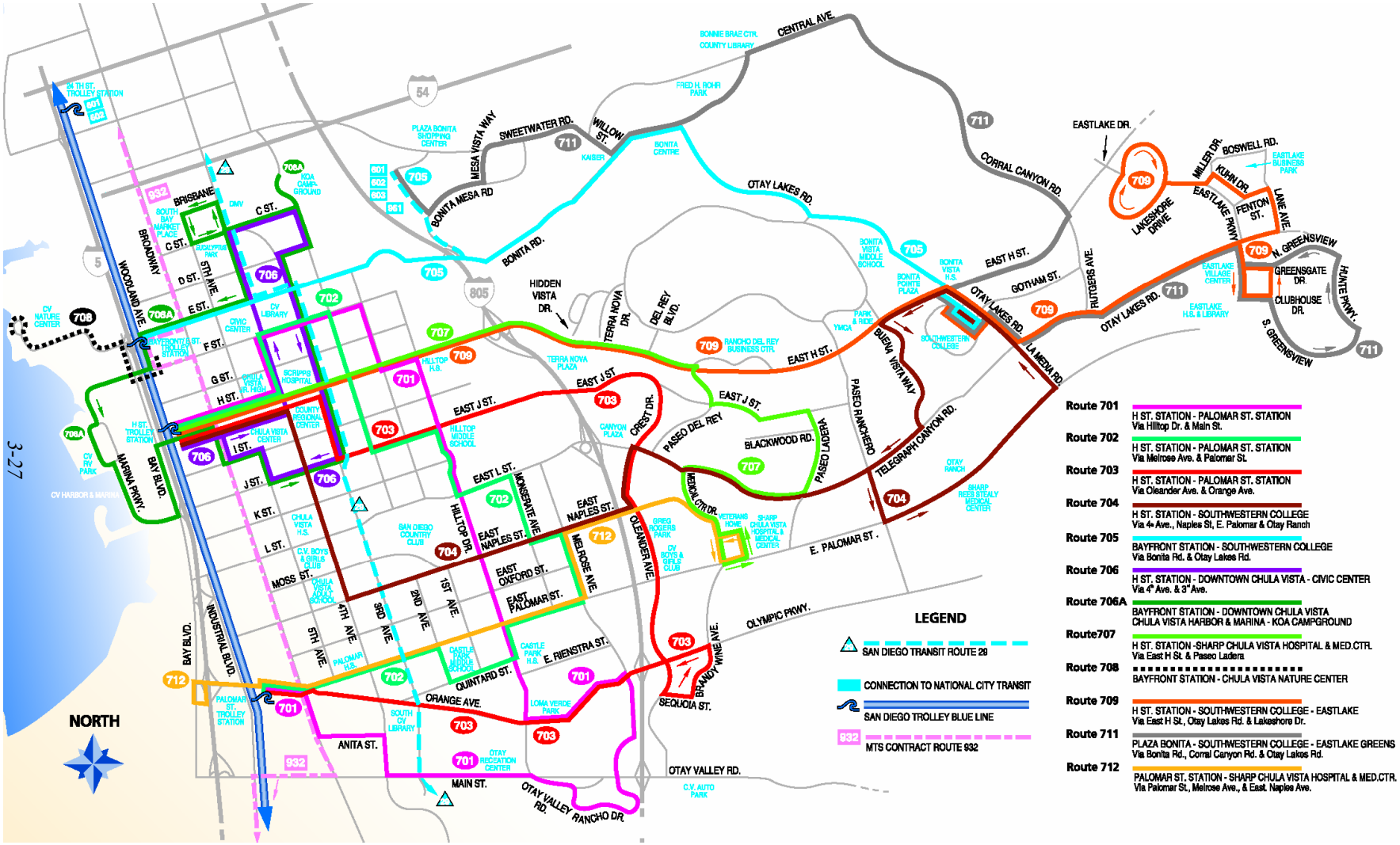

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Figure 3-5
Existing Transit Routes

4.0 URBAN CORE TRAFFIC

The following section describes the City of Chula Vista's Urban Core Specific Plan project including the projected land uses, Urban Core traffic generation, and transportation modeling assumptions.

Land Uses

In order to realize the vision for the urban core established by the updated General Plan, it was recognized that existing zoning for the Urban Core focus area or "subdistricts" needed "re-tooling". The 30+ year-old zoning regulations either precluded or created a cumbersome entitlement process to achieve the variety of living, employment, and service choices envisioned by the General Plan and quite common place in the 21st century. Therefore, the Specific Plan was prepared to provide a set of contemporary implementing tools to allow new development and redevelopment to occur over the next 20 to 25 years. To that end, the Specific Plan anticipates the following projected buildout over the life of the plan consistent with the General Plan, which is summarized in **Table 4-1**.

Figure 4-1 shows the location of the land uses assumed in the Urban Core.

TABLE 4-1
URBAN CORE SPECIFIC PLAN PROJECTED BUILDOUT

Land Use	Existing	Net Increase	Total
Residential	3,700 du	7,100 du	10,800 du
Retail	3,000,000 sf	1,000,000 sf	4,000,000 sf
Office	2,400,000 sf	1,300,000 sf	3,700,000 sf
Visitor Serving Commercial	--	1,300,000 sf	1,300,000 sf

Note:
All totals are approximate and may include a combination of new infill development and existing uses.

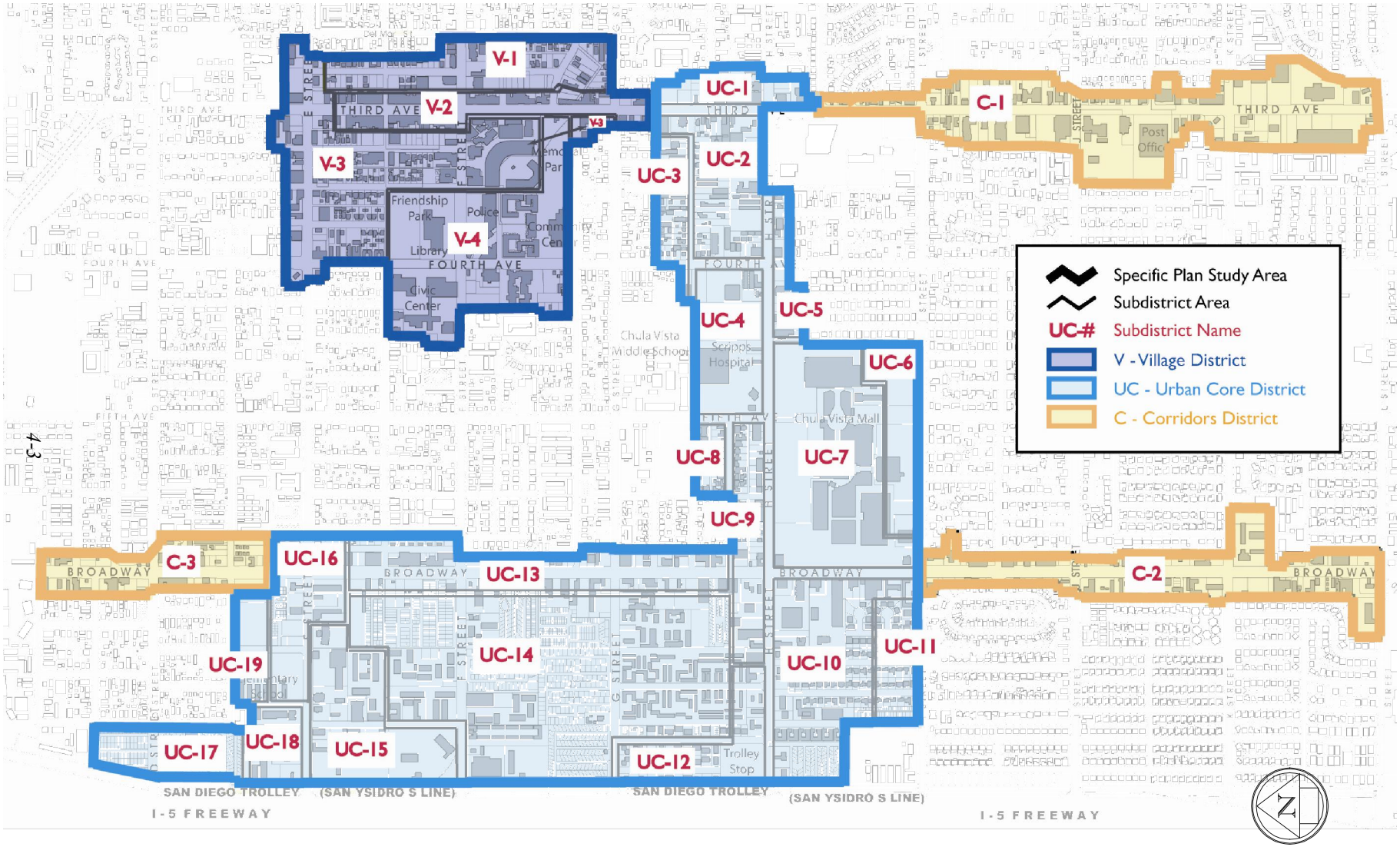
Urban Core Traffic Generation

The traffic associated with the Urban Core has been included in the traffic volumes used for the General Plan Update. The traffic forecasts from the General Plan Update were used for the UCSP transportation analysis because the trip generation for the Urban Core is generally consistent with the General Plan land uses associated projected traffic volumes and distribution patterns. Based on the Urban Core land uses shown in Figure 4-1, **Table 4-2** summarizes the trip generation for the Chula Vista Urban Core project. As shown in the table, a total of approximately 331,100 ADT is expected with the full build-out of the Urban Core. This would be an increase of 141,100 ADT over existing conditions. The largest percentage increase in ADT would occur from the residential land use, with an increase of approximately 100 percent.

TABLE 4-2
TRIP GENERATION SUMMARY

Land Use	Existing ADT	Net ADT Increase	Total ADT
Residential	22,200	42,600	64,800
Retail	120,000	40,000	160,000
Office	48,000	26,000	74,000
Visitor Serving Commercial	--	32,500	32,500
TOTALS	**190,200**	**141,100**	**331,100**

Note:
Trip generation values shown above were based rates referenced in the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, SANDAG, April 2002. (6 trips/du for residential, 40 trips/1,000 sf for retail, 20 trips/1,000 sf for office, and 50% hotel/50% retail for visitor serving commercial)



Kimley-Horn and Associates, Inc.

Figure 4-1
Location of Urban Core Land Uses

Transportation Modeling

Traffic volumes for of the proposed Urban Core Specific Plan were generated using the SANDAG TRANPLAN regional traffic model, which is based on Series 10 employment and population projections for the San Diego region. This computerized model takes land use and transportation network information as inputs and estimates the volumes of traffic on existing and future roadways under long-term future conditions using the four-step Urban Transportation Planning Process:

1) Trip generation;

2) Mode split;

3) Trip distribution; and

4) Traffic assignment.

Regional transportation infrastructure was modeled using SANDAG's "reasonably expected" Mobility 2030 assumptions and General Plan land use assumptions. The following list summarizes the land use and network assumptions evaluated in this study:

Land Use Assumptions

- Full build-out of planned future land uses in the City of Chula Vista
- 2030 Population and Employment in the region
- See General Plan for other/all considerations

Network Assumptions

- Woodlawn Avenue would not be connected between F Street and G Street. H Street between Broadway and Hilltop Drive would be reclassified from a six-lane major to four-lane major (Circulation element changes within Urban Core. For other changes in Chula Vista, refer to Figure 1.2-1 of the City of Chula Vista General Plan shown in **Appendix D**.)
- SR-125 is a four-lane toll road
- See General Plan for other/all considerations

Transit Assumptions

- Regional Transit Vision (RTV) described in the Regional Transportation Plan (RTP) emphasizes integration of transit service within communities and neighborhoods, makes use of high-occupancy vehicle (HOV) lanes and/or managed lanes, incorporates signal priority or transit-only lanes on arterials, increasing transit competitiveness with automobile trips, and improved transit customer service.

- Regional Comprehensive Plan (RCP) incorporates smart growth, which involves identifying appropriate land patterns and a complementary multi-modal transportation system so as to improve the viability of public transit and other travel modes for the whole range of trip types, including commuting, shopping, school, etc.
- A Yellow Car Bus Rapid Transit (BRT) route would be provided along I-5, additional Blue Line Light Rail Transit (LRT) service would be provided along the existing trolley tracks, and a BRT route would be provided along H Street connecting the west and east ends of Chula Vista (For other routes outside of the Urban Core, refer to Figure 1.2-3 of the City of Chula Vista General Plan shown in **Appendix D**.)

5.0 YEAR 2030 CONDITIONS

This section provides a description of the year 2030 traffic conditions with the full build-out of the City of Chula Vista's Urban Core Specific Plan project land uses.

Road Network

It was assumed that roads within the Urban Core would be reclassified, but not yet built to their ultimate classification. As a result, no changes would be made to the roadway network compared to Existing Conditions. See previously shown Figures 3-1 to 3-1.5 and 3-2 for the traffic control and lane configurations at the study intersections and the number of lanes and street classifications on each roadway segment in 2030, respectively.

Traffic Volumes

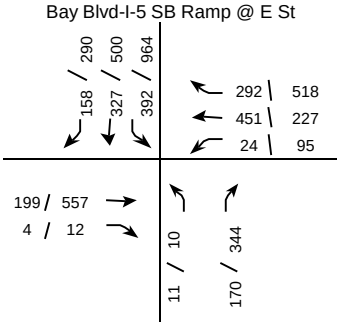
Year 2030 traffic volumes at study intersections were calculated by applying growth factors to existing traffic volumes. These growth factors were determined by comparing the Year 2030 ADT by the existing ADT for each respective roadway segment. This growth in traffic varied between a minimum of 10 percent to a more than doubling of traffic on some intersection approaches. In cases where extreme traffic growth was projected, adjustments were made to account for spreading of the peak hour. This spreading presumes that the peak hour may last for more than one hour in the morning or afternoon peak hour.

The Year 2030 Conditions ADT volumes along the roadway segments were obtained from SANDAG. This forecast model was based on Series 10 and included the Regional Transit Vision (RTV) assumption.

Figures 5-1 to **5-1.5** illustrate the Year 2030 Conditions peak-hour traffic volumes at the study intersections and **Figure 5-2** illustrates the Year 2030 Conditions ADT volumes along the roadway segments.

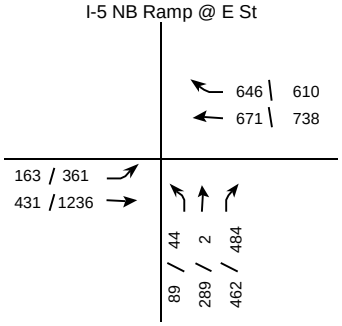
Intersection 1:

Bay Blvd-I-5 SB Ramp @ E St



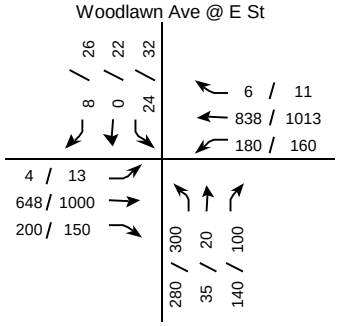
Intersection 2:

I-5 NB Ramp @ E St



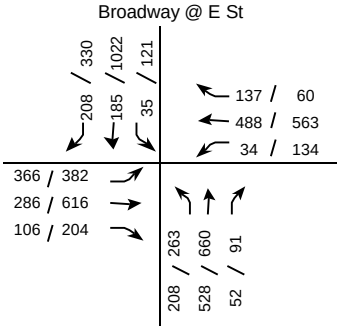
Intersection 3:

Woodlawn Ave @ E St



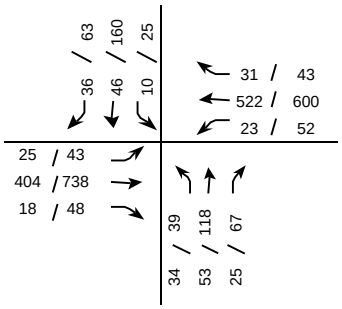
Intersection 4:

Broadway @ E St



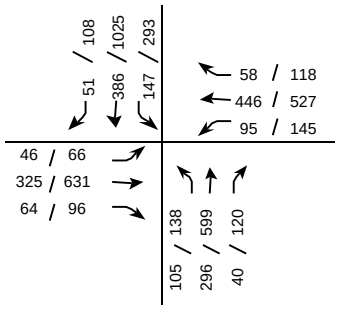
Intersection 5:

5th Ave @ E St



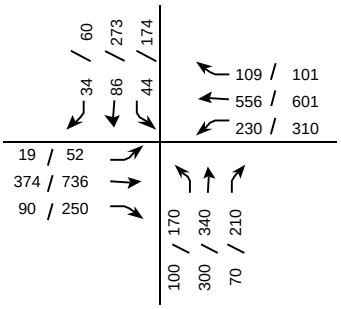
Intersection 6:

4th Ave @ E St



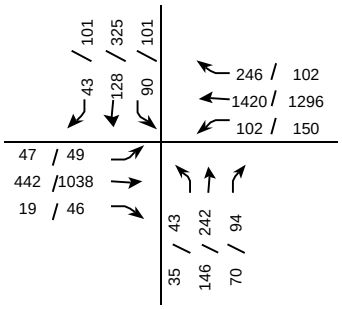
Intersection 7:

3rd Ave @ E St



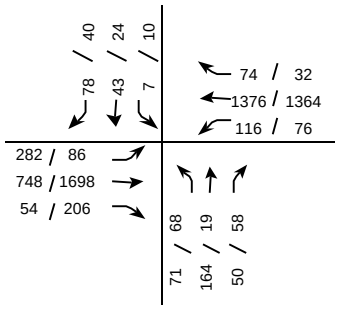
Intersection 8:

2nd Ave @ E St



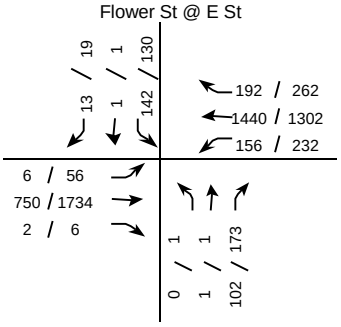
Intersection 9:

1st Ave @ E St



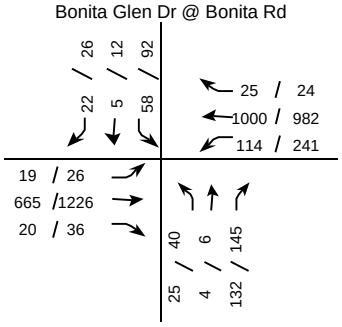
Intersection 10:

Flower St @ E St



Intersection 11:

Bonita Glen Dr @ Bonita Rd



Legend

XX / YY =AM/PM Peak Hour Volumes

Figure 5-1

Year 2030 Peak-Hour Traffic Volumes

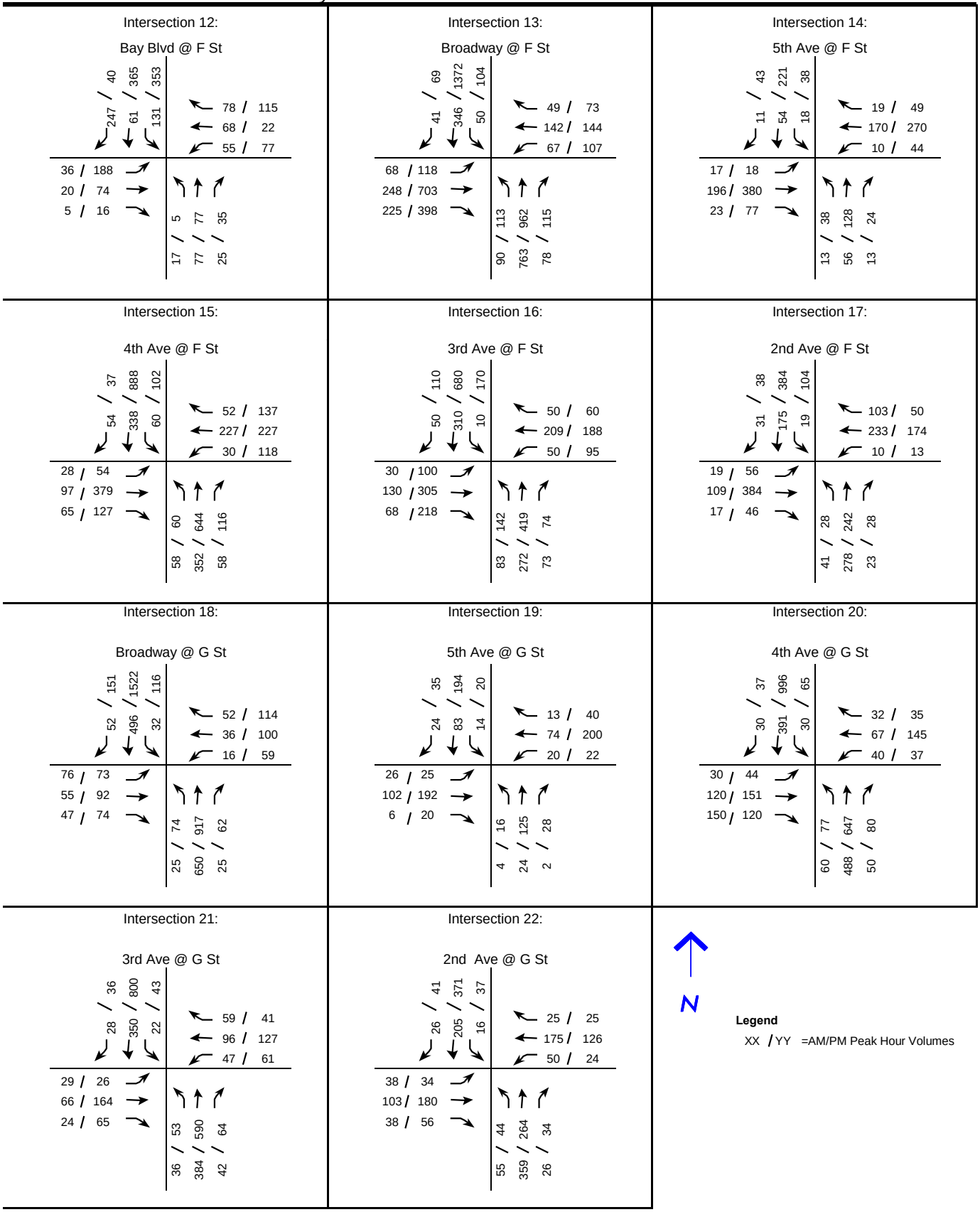


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Figure 5-1.1

Year 2030 Peak-Hour Traffic Volumes

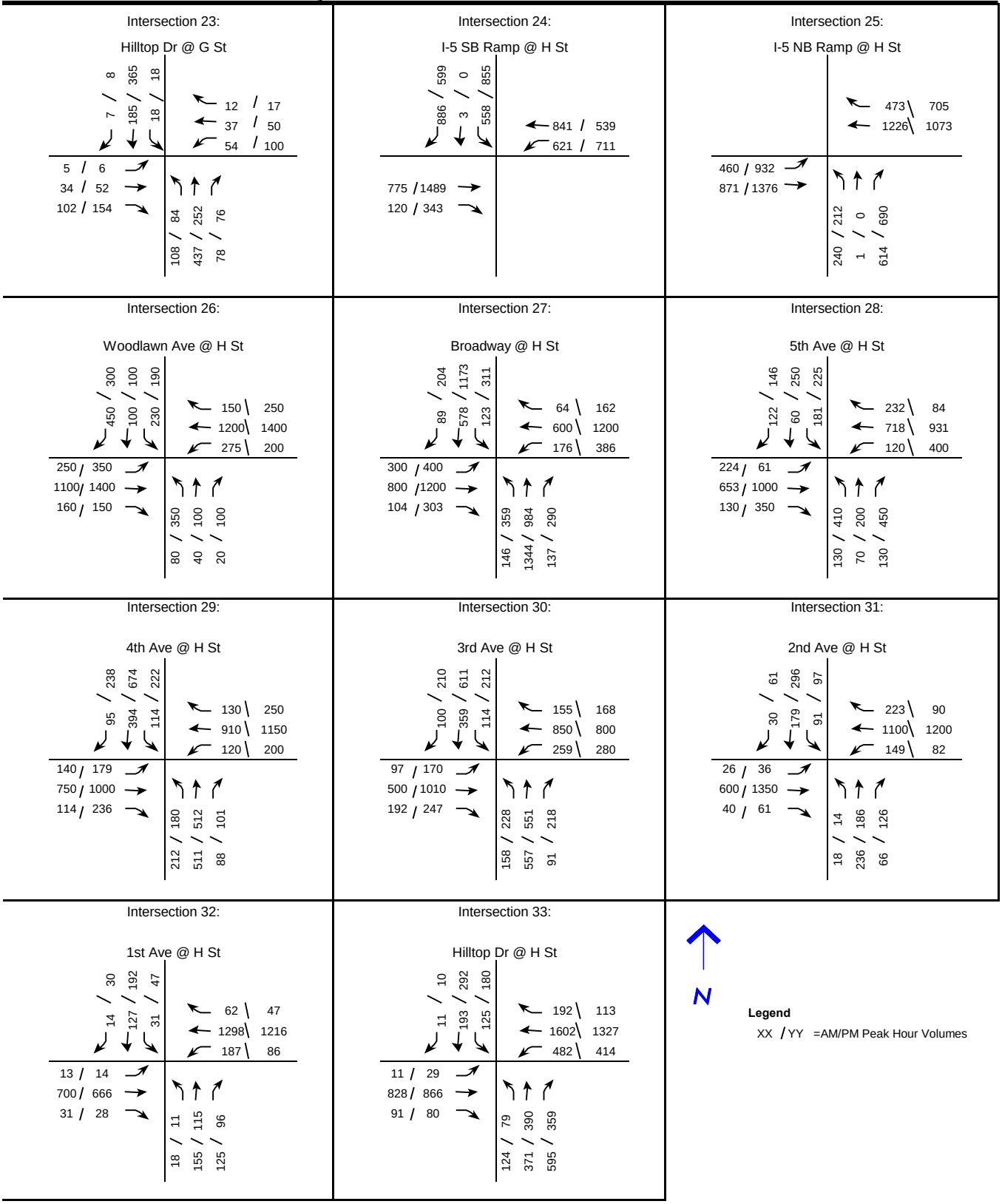
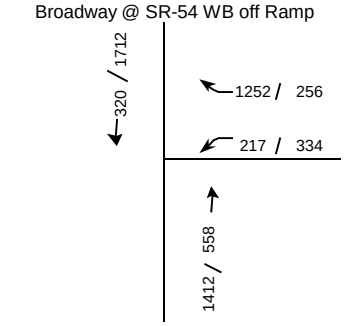


Figure 5-1.2
Year 2030 Peak-Hour Traffic Volumes

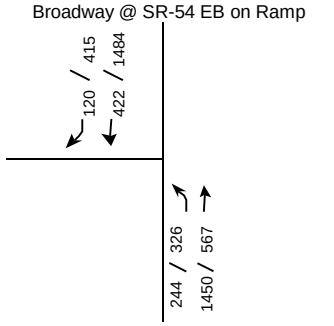
Intersection 34:

Broadway @ SR-54 WB off Ramp



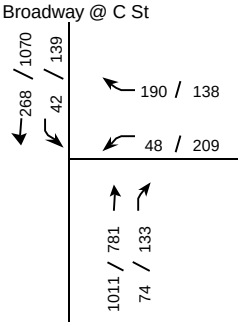
Intersection 35:

Broadway @ SR-54 EB on Ramp



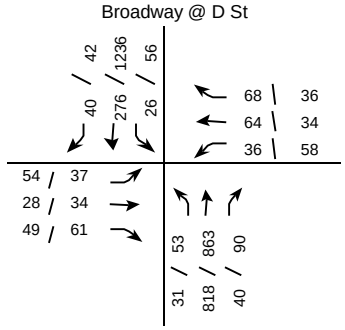
Intersection 36:

Broadway @ C St



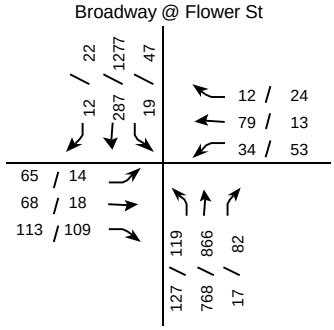
Intersection 37:

Broadway @ D St



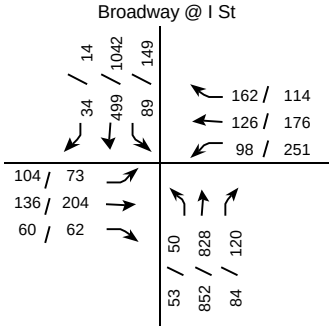
Intersection 38:

Broadway @ Flower St



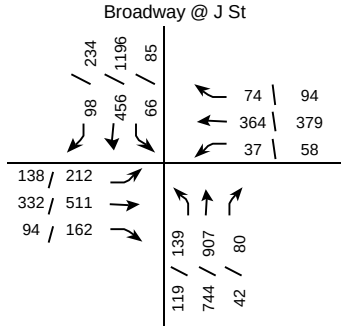
Intersection 39:

Broadway @ I St



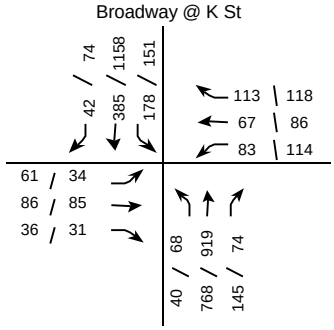
Intersection 40:

Broadway @ J St



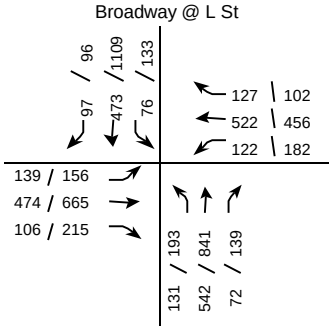
Intersection 41:

Broadway @ K St



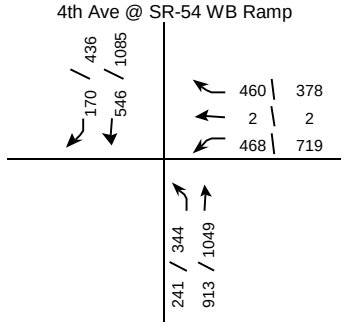
Intersection 42:

Broadway @ L St



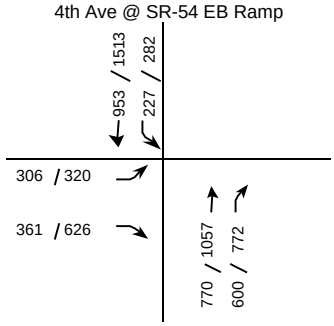
Intersection 43:

4th Ave @ SR-54 WB Ramp



Intersection 44:

4th Ave @ SR-54 EB Ramp



Legend

XX / YY =AM/PM Peak Hour Volumes

Kimley-Horn and Associates, Inc.

Figure 5-1.3

Year 2030 Peak-Hour Traffic Volumes

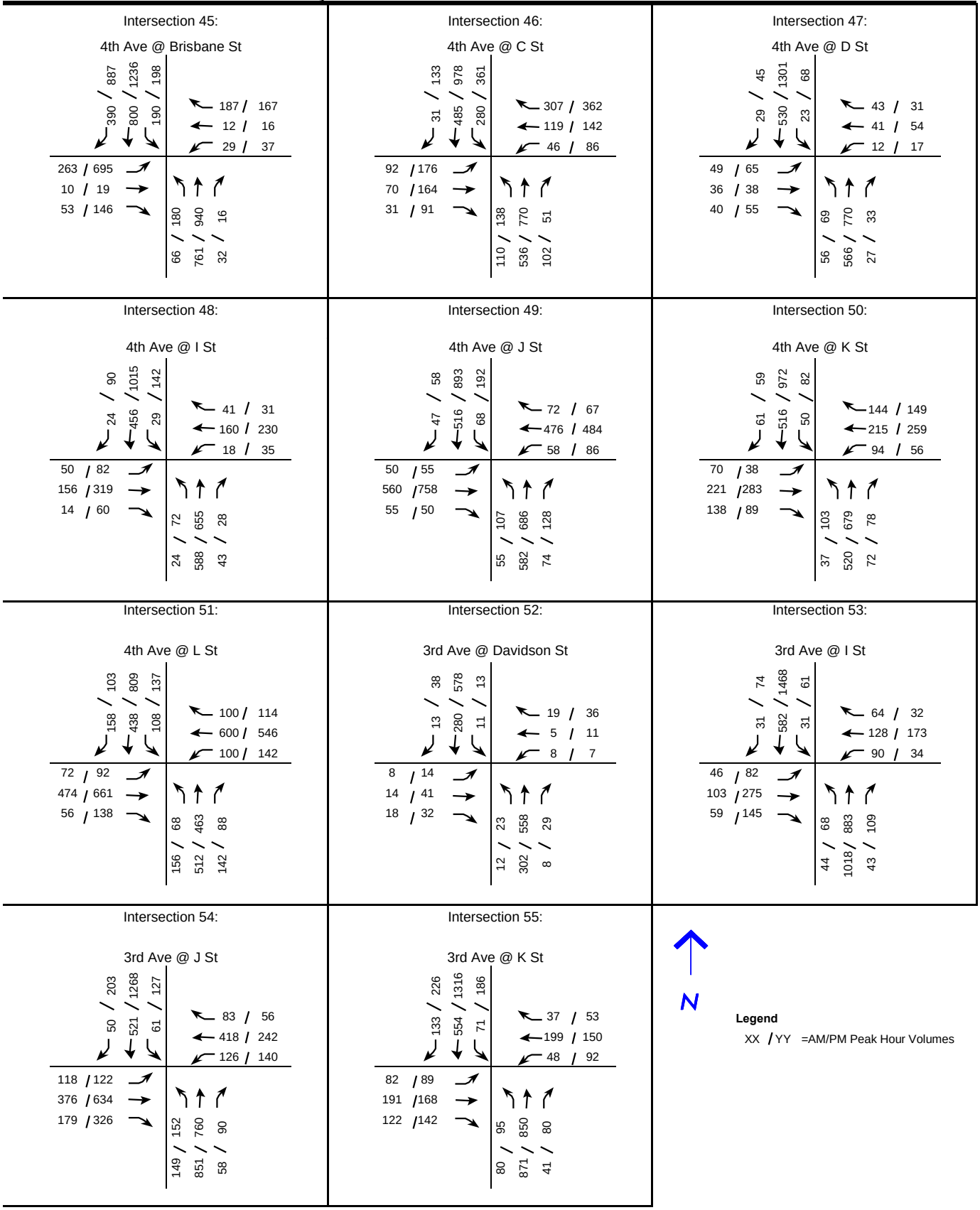


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Figure 5-1.4

Year 2030 Peak-Hour Traffic Volumes

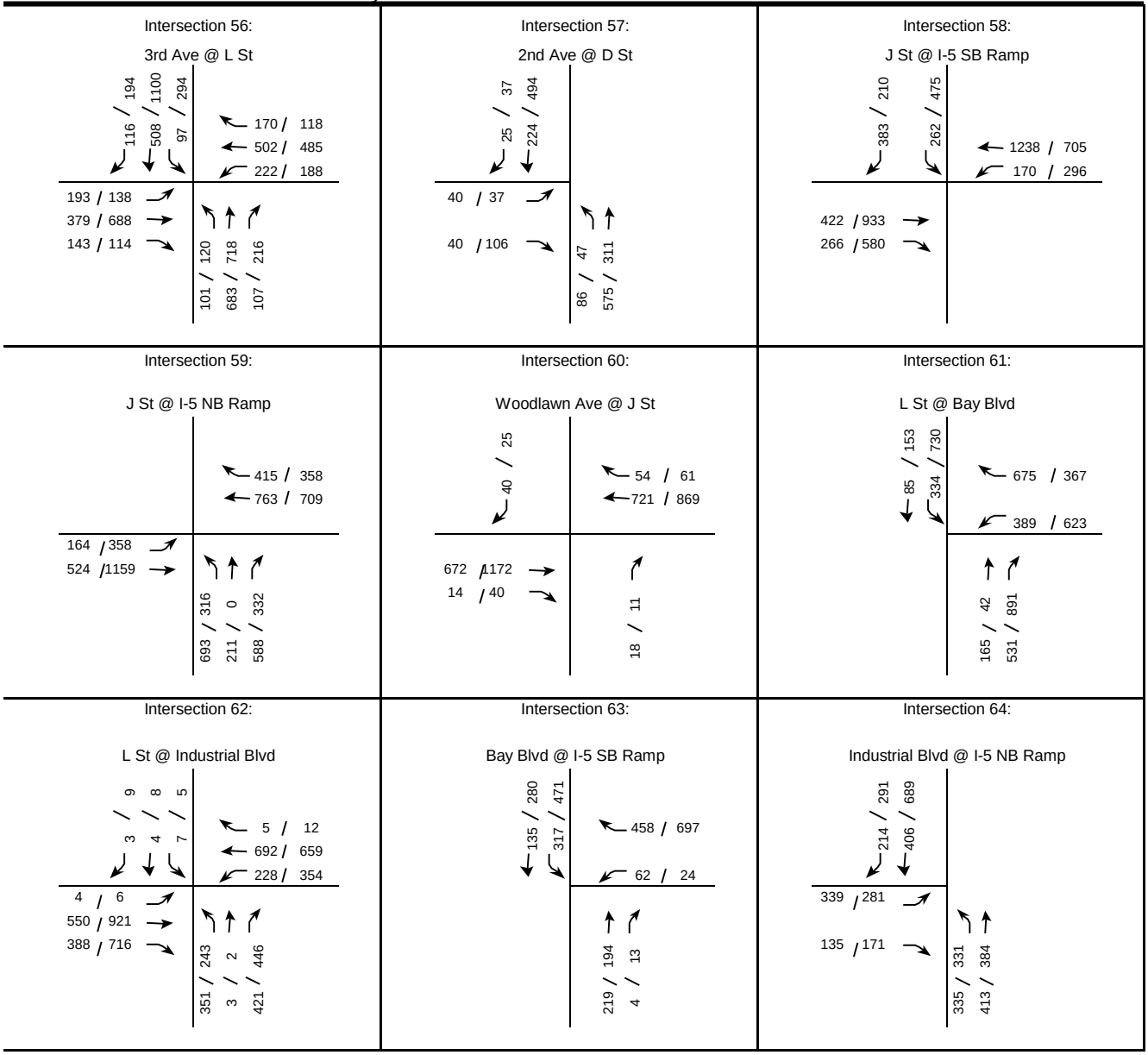

Figure 5-1.5

Year 2030 Peak-Hour Traffic Volumes

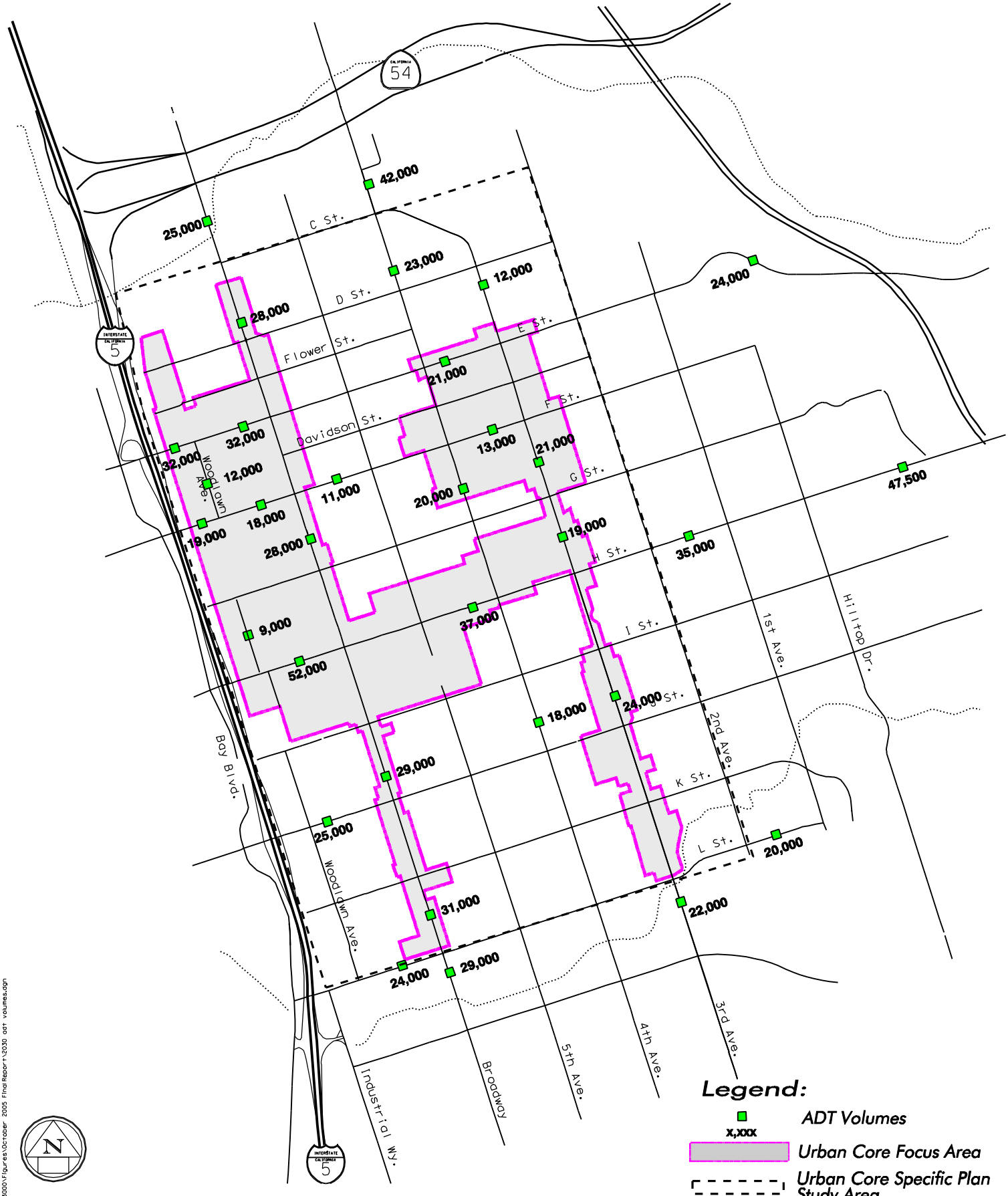

Figure 5-2

Year 2030 ADT Volumes

KIMLEY-HORN and ASSOCIATES

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Intersection Analysis

Table 5-1 displays the LOS analysis results for the study intersections under the Year 2030 Conditions scenario. As shown in this table, all study intersections operate at LOS D or better during both peak periods, except for the following 19 intersections:

- #1 Bay Boulevard/I-5 SB Ramp @ E Street (LOS E – AM Peak, LOS F – PM Peak);
- #2 I-5 NB Ramp @ E Street (LOS E – AM Peak);
- #13 Broadway @ F Street (LOS E – PM Peak);
- #24 I-5 SB Ramp @ H Street (LOS F – PM Peak);
- #25 I-5 NB Ramp @ H Street (LOS F – PM Peak);
- #26 Woodlawn Avenue @ H Street (LOS F – PM Peak);
- #27 Broadway @ H Street (LOS F – PM Peak);
- #28 5th Avenue @ H Street (LOS E – PM Peak);
- #29 4th Avenue @ H Street (LOS E – PM Peak);
- #33 Hilltop Drive @ H Street (LOS E – AM and PM Peak);
- #34 Broadway @ SR-54 WB Ramp (LOS F – AM Peak);
- #44 4th Avenue @ SR-54 EB Ramp (LOS F – PM Peak);
- #45 4th Avenue @ Brisbane Street (LOS E – PM Peak);
- #54 3rd Avenue @ J Street (LOS E – PM Peak);
- #57 2nd Avenue @ D Street (LOS E – PM Peak);
- #59 J Street @ I-5 NB Ramp (LOS F – AM Peak, LOS E – PM Peak);
- #61 L Street @ Bay Boulevard (LOS F – PM Peak);
- #63 Bay Boulevard @ I-5 SB Ramp (LOS F – AM and PM Peak); and
- #64 Industrial Boulevard @ I-5 NB Ramp (LOS F – PM Peak).

The majority of the interchange study intersections along I-5 or SR-54 would operate at an unacceptable LOS. In addition, many of the intersections along the H Street corridor would operate at an unacceptable LOS. As previously noted in Section 3, the delay at the E Street and H Street intersections affected by the trolley crossing would be worse than the delay shown in Table 5-1. Additional delays would be between 17 and 40 seconds per vehicle (depending on the direction and time of day) and drop the LOS by at least one grade. By providing a grade-separated trolley crossing at E Street and H Street, delays and LOS would be similar to the results shown in Table 5-1.

Appendix C contains the peak-hour intersections LOS calculation worksheets.

Roadway Segment Analysis

Table 5-2 summarizes the Year 2030 Conditions LOS analysis for the roadway segments located in the Urban Core. The projected volume, estimated using the approved transportation model of SANDAG, is compared to the acceptable volume of the roadways using the adopted functional classifications from the Chula Vista General Plan. As shown in this table, all roadway segments meet the adopted LOS standard of D for the Urban Street System, except for the following roadway segments:

- H Street between I-5 and Broadway (LOS F)
- H Street between Hilltop Drive and I-805 (LOS E)

TABLE 5-1

YEAR 2030 CONDITIONS

PEAK HOUR INTERSECTION LEVEL OF SERVICE SUMMARY

	INTERSECTION	PEAK HOUR	EXISTING		YEAR 2030		INCREASE IN DELAY	SIGNIFICANT IMPACT?
			DELAY (a)	LOS (b)	DELAY (a)	LOS (b)		
1	Bay Blvd-I-5 SB Ramp @ E St	AM	10.1	B	**58.4**	**E**	**48.3**	**YES**
		PM	16.6	B	**302.9**	**F**	**286.3**	**YES**
2	I-5 NB Ramp @ E St	AM	33.2	C	**60.5**	**E**	**27.3**	**YES**
		PM	18.2	B	31.9	C	13.7	NO
3	Woodlawn Ave @ E St	AM	21.7	C	25.8	C	4.1	NO
		PM	15.5	B	20.5	C	5.0	NO
4	Broadway @ E St	AM	16.9	B	30.3	C	13.4	NO
		PM	26.3	C	47.2	D	20.9	NO
5	5th Ave @ E St	AM	5.0	A	5.6	A	0.6	NO
		PM	6.4	A	7.7	A	1.3	NO
6	4th Ave @ E St	AM	13.5	B	16.2	B	2.7	NO
		PM	18.8	B	33.3	C	14.5	NO
7	3rd Ave @ E St	AM	11.9	B	12.9	B	1.0	NO
		PM	15.2	B	24.8	C	9.6	NO
8	2nd Ave @ E St	AM	7.3	A	15.5	B	8.2	NO
		PM	11.0	B	28.9	C	17.9	NO
9	1st Ave @ E St	AM	6.8	A	40.6	D	33.8	NO
		PM	5.5	A	10.1	B	4.6	NO
10	Flower St @ E St	AM	10.6	B	20.2	C	9.6	NO
		PM	12.5	B	37.1	D	24.6	NO
11	Bonita Glen Dr @ E St	AM	12.1	B	12.5	B	0.4	NO
		PM	16.5	B	23.0	C	6.5	NO
12	Bay Blvd @ F St	AM	8.8	A	9.8	A	1.0	NO
		PM	14.7	B	21.4	C	6.7	NO
13	Broadway @ F St	AM	16.5	B	17.7	B	1.2	NO
		PM	24.1	C	**66.1**	**E**	**42.0**	**YES**
14	5th Ave @ F St	AM	5.7	A	6.6	A	0.9	NO
		PM	8.2	A	10.0	A	1.8	NO
15	4th Ave @ F St	AM	13.5	B	15.3	B	1.8	NO
		PM	17.7	B	23.7	C	6.0	NO
16	3rd Ave @ F St	AM	13.9	B	15.9	B	2.0	NO
		PM	19.2	B	23.5	C	4.3	NO
17	2nd Ave @ F St	AM	9.7	A	13.4	B	3.7	NO
		PM	12.5	B	12.7	B	0.2	NO
18	Broadway @ G St	AM	12.3	B	14.0	B	1.7	NO
		PM	14.9	B	21.0	C	6.1	NO
19	5th Ave @ G St	AM	6.3	A	7.7	A	1.4	NO
		PM	7.5	A	8.3	A	0.8	NO
20	4th Ave @ G St	AM	8.9	A	12.8	B	3.9	NO
		PM	10.3	B	18.0	B	7.7	NO

Notes:

Bold values indicate intersections operating at LOS E or F.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

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TABLE 5-1

YEAR 2030 CONDITIONS

PEAK HOUR INTERSECTION LEVEL OF SERVICE SUMMARY (Continued)

	INTERSECTION	PEAK HOUR	EXISTING		YEAR 2030		INCREASE IN DELAY	SIGNIFICANT IMPACT?
			DELAY (a)	LOS (b)	DELAY (a)	LOS (b)		
21	3rd Ave @ G St	AM	8.6	A	11.8	B	3.2	NO
		PM	9.2	A	10.5	B	1.3	NO
22	2nd Ave @ G St	AM	14.1	B	22.2	C	8.1	NO
		PM	16.3	C	32.3	D	16.0	NO
23	Hilltop Dr @ G St	AM	16.7	C	33.7	D	17.0	NO
		PM	14.4	B	24.1	C	9.7	NO
24	I-5 SB Ramp @ H St	AM	28.8	C	36.7	D	7.9	NO
		PM	21.1	C	**84.5**	**F**	**63.4**	**YES**
25	I-5 NB Ramp @ H St	AM	12.7	B	47.6	D	34.9	NO
		PM	14.8	B	**138.4**	**F**	**123.6**	**YES**
26	Woodlawn Ave @ H St	AM	38.0	D	33.7	C	-4.3	NO
		PM	22.3	**F**	**260.6**	**F**	**238.3**	**YES**
27	Broadway @ H St	AM	25.7	C	42.7	D	17.0	NO
		PM	27.1	C	**118.1**	**F**	**91.0**	**YES**
28	5th Ave @ H St	AM	10.8	B	15.2	B	4.4	NO
		PM	11.3	B	**61.6**	**E**	**50.3**	**YES**
29	4th Ave @ H St	AM	22.1	C	38.6	D	16.5	NO
		PM	29.2	C	**59.4**	**E**	**30.2**	**YES**
30	3rd Ave @ H St	AM	19.3	B	23.0	C	3.7	NO
		PM	23.8	C	39.7	D	15.9	NO
31	2nd Ave @ H St	AM	8.4	A	13.7	B	5.3	NO
		PM	11.5	B	31.4	C	19.9	NO
32	1st Ave @ H St	AM	7.6	A	9.8	A	2.2	NO
		PM	8.2	A	12.5	B	4.3	NO
33	Hilltop Dr @ H St	AM	32.2	C	**58.3**	**E**	**26.1**	**YES**
		PM	41.3	D	**74.2**	**E**	**32.9**	**YES**
34	Broadway @ SR-54 WB Ramp	AM	**82.9**	**F**	**190.6**	**F**	**107.7**	**YES**
		PM	11.8	B	16.2	B	4.4	NO
35	Broadway @ SR-54 EB Ramp	AM	3.3	A	10.1	B	6.8	NO
		PM	6.3	A	17.7	B	11.4	NO
36	Broadway @ C St	AM	18.1	B	20.1	C	2.0	NO
		PM	15.1	B	18.1	B	3.0	NO
37	Broadway @ D Street	AM	9.2	A	12.1	B	2.9	NO
		PM	10.2	B	14.9	B	4.7	NO
38	Broadway @ Flower St	AM	11.5	B	12.3	B	0.8	NO
		PM	14.0	B	17.4	B	3.4	NO
39	Broadway @ I St	AM	16.3	B	16.4	B	0.1	NO
		PM	17.3	B	21.1	C	3.8	NO
40	Broadway @ J St	AM	13.6	B	15.7	B	2.1	NO
		PM	18.6	B	29.6	C	11.0	NO

Notes:

Bold values indicate intersections operating at LOS E or F.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

TABLE 5-1

YEAR 2030 CONDITIONS

PEAK HOUR INTERSECTION LEVEL OF SERVICE SUMMARY (Continued)

	INTERSECTION	PEAK HOUR	EXISTING		YEAR 2030		INCREASE IN DELAY	SIGNIFICANT IMPACT?
			DELAY (a)	LOS (b)	DELAY (a)	LOS (b)		
41	Broadway @ K St	AM	11.7	B	14.5	B	2.8	NO
		PM	13.2	B	16.4	B	3.2	NO
42	Broadway @ L St	AM	15.5	B	17.5	B	2.0	NO
		PM	20.4	C	34.7	C	14.3	NO
43	4th Ave @ SR-54 WB Ramp	AM	14.7	B	23.1	C	8.4	NO
		PM	25.9	C	42.3	D	16.4	NO
44	4th Ave @ SR-54 EB Ramp	AM	13.4	B	37.2	D	23.8	NO
		PM	27.2	C	**95.2**	**F**	**68.0**	**YES**
45	4th Ave @ Brisbane St	AM	21.5	C	25.8	C	4.3	NO
		PM	27.3	C	**61.5**	**E**	**34.2**	**YES**
46	4th Ave @ C St	AM	23.2	C	24.7	C	1.5	NO
		PM	31.4	C	40.0	D	8.6	NO
47	4th Ave @ D St	AM	9.1	A	13.5	B	4.4	NO
		PM	10.5	B	12.6	B	2.1	NO
48	4th Ave @ I St	AM	8.8	A	11.9	B	3.1	NO
		PM	10.1	B	18.0	B	7.9	NO
49	4th Ave @ J St	AM	9.3	A	12.0	B	2.7	NO
		PM	15.7	B	42.7	D	27.0	NO
50	4th Ave @ K St	AM	8.5	A	12.7	B	4.2	NO
		PM	10.1	B	20.0	B	9.9	NO
51	4th Ave @ L St	AM	24.6	C	27.6	C	3.0	NO
		PM	26.6	C	35.3	D	8.7	NO
52	3rd Ave @ Davidson St	AM	9.9	A	14.7	B	4.8	NO
		PM	13.2	B	19.2	B	6.0	NO
53	3rd Ave @ I St	AM	10.1	B	11.6	B	1.5	NO
		PM	12.2	B	18.3	B	6.1	NO
54	3rd Ave @ J St	AM	18.8	B	22.9	C	4.1	NO
		PM	35.9	D	**74.5**	**E**	**38.6**	**YES**
55	3rd Ave @ K St	AM	9.5	A	12.3	B	2.8	NO
		PM	11.0	B	22.4	C	11.4	NO
56	3rd Ave @ L St	AM	18.1	B	22.9	C	4.8	NO
		PM	27.0	C	44.1	D	17.1	NO
57	2nd Ave @ D St	AM	14.9	B	31.2	D	16.3	NO
		PM	14.9	B	**36.0**	**E**	**21.1**	**YES**
58	J St @ I-5 SB Ramp	AM	8.9	A	17.5	B	8.6	NO
		PM	15.1	B	40.4	D	25.3	NO
59	J St @ I-5 NB Ramp	AM	10.6	B	**135.2**	**F**	**124.6**	**YES**
		PM	8.2	A	**61.7**	**E**	**53.5**	**YES**
60	Woodlawn Ave @ J St	AM	11.0	B	16.3	C	5.3	NO
		PM	11.9	B	18.2	C	6.3	NO

Notes:

Bold values indicate intersections operating at LOS E or F.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

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TABLE 5-1

YEAR 2030 CONDITIONS

PEAK HOUR INTERSECTION LEVEL OF SERVICE SUMMARY (Continued)

	INTERSECTION	PEAK HOUR	EXISTING		YEAR 2030		INCREASE IN DELAY	SIGNIFICANT IMPACT?
			DELAY (a)	LOS (b)	DELAY (a)	LOS (b)		
61	L St @ Bay Blvd	AM	16.8	C	22.7	C	5.9	NO
		PM	**120.3**	**F**	**203.0**	**F**	**82.7**	**YES**
62	L St @ Industrial Blvd	AM	18.9	B	30.9	C	12.0	NO
		PM	25.4	C	52.6	D	27.2	NO
63	Bay Blvd @ I-5 SB Ramp	AM	22.2	C	**84.0**	**F**	**61.8**	**YES**
		PM	48.6	**E**	**221.2**	**F**	**172.6**	**YES**
64	Industrial Blvd @ I-5 NB Ramp	AM	15.4	C	26.0	D	10.6	NO
		PM	17.7	C	**66.5**	**F**	**48.8**	**YES**

Notes:

ECL= Exceeds calculable limit . At intersections at or over capacity, the calculated delay value becomes unreliable.

Bold values indicate intersections operating at LOS E or F.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

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TABLE 5-2

YEAR 2030 ROADWAY SEGMENT LEVEL OF SERVICE SUMMARY

STREET	SEGMENT	STREET CLASSIFICATION (b)	DAILY TRAFFIC VOLUME	ACCEPTABLE VOLUME	LOS E CAPACITY	VOLUME TO CAPACITY (V/C)	DAILY SEGMENT LOS
E Street	I-5 - Woodlawn Avenue	4 Lanes Gateway Street	32,000	43,200	48,000	0.67 (b)	B
	Woodlawn Avenue - Broadway	4 Lanes Gateway Street	32,000	43,200	48,000	0.67 (b)	B
	Broadway - 1st Avenue	4 Lanes Urban Arterial	21,000	37,800	42,000	0.50 (b)	A
	1st Avenue - I-805	4 Lanes Gateway Street	24,000	43,200	48,000	0.50 (b)	A
F Street	Bay Boulevard - Woodlawn Avenue	4 Lanes Downtown Promenade	19,000	33,750	37,500	0.51 (b)	A
	Woodlawn Avenue - Broadway	4 Lanes Downtown Promenade	18,000	33,750	37,500	0.48 (b)	A
	Broadway - 4th Avenue	2 Lanes Downtown Promenade	11,000	14,400	16,000	0.69 (b)	B
	4th Avenue - 3rd Avenue	4 Lanes Downtown Promenade	13,000	33,750	37,500	0.35 (b)	A
H Street	I-5 - Broadway	4 Lanes Gateway Street (c)	52,000	43,200	48,000	1.08 (b)	**F**
	Broadway - 3rd Avenue	4 Lanes Urban Arterial	37,000	37,800	42,000	0.88 (b)	A
	3rd Avenue- Hilltop Drive	4 Lanes Urban Arterial	35,000	37,800	42,000	0.83 (b)	A
	Hilltop Drive - I-805	4 Lanes Gateway Street (d)	47,500	43,200	48,000	0.99 (b)	**E**
J Street	Bay Boulevard - Broadway	4 Lanes Major Street	25,000	40,000	37,500	0.67 (b)	B
L Street	I-5 - Broadway	4 Lanes Gateway Street	24,000	43,200	48,000	0.50 (b)	A
	Broadway - Hilltop Drive	4 Lanes Class I Collector	20,000	22,000	27,500	0.73 (b)	C
Woodlawn Avenue	E Street - F Street	2 Lanes Downtown Promenade	12,000	14,400	16,000	0.75 (b)	C
	G Street - H Street	2 Lanes Downtown Promenade	9,000	14,400	16,000	0.56 (b)	A
Broadway	SR-54 - C Street	4 Lanes Gateway Street	25,000	43,200	48,000	0.52 (b)	A
	C Street - E Street	4 Lanes Commercial Boulevard	28,000	33,750	37,500	0.75 (b)	C
	E Street - H Street	4 Lanes Commercial Boulevard	28,000	33,750	37,500	0.75 (b)	C
	H Street - K Street	4 Lanes Commercial Boulevard	29,000	33,750	37,500	0.77 (b)	C
	K Street - L Street	4 Lanes Commercial Boulevard	31,000	33,750	37,500	0.83 (b)	D
	South of L Street	4 Lanes Major Street	29,000	40,000	37,500	0.77	C
4th Avenue	SR-54 - C Street	6 Lanes Gateway Street	42,000	61,200	68,000	0.62 (b)	B
	C Street - E Street	4 Lanes Urban Arterial	23,000	37,800	42,000	0.55 (b)	A
	E Street - H Street	4 Lanes Urban Arterial	20,000	37,800	42,000	0.48 (b)	A
	H Street - L Street	4 Lanes Urban Arterial	18,000	37,800	42,000	0.43 (b)	A
3rd Avenue	C Street - E Street	4 Lanes Commercial Boulevard	12,000	33,750	37,500	0.32 (b)	A
	E Street - G Street	4 Lanes Downtown Promenade	21,000	33,750	37,500	0.56 (b)	A
	G Street - H Street	4 Lanes Downtown Promenade	19,000	33,750	37,500	0.51 (b)	A
	H Street - L Street	4 Lanes Commercial Boulevard	24,000	33,750	37,500	0.64 (b)	B
	South of L Street	4 Lanes Class I Collector	22,000	22,000	27,500	0.80	C

NOTE: Values in **bold** indicate roadway segments exceeding the City's minimum performance standard.
(a) Street classification is based on the standards provided in the 2005 Chula Vista General Plan.
(b) This roadway segment is part of the Urban Core Circulation Element.
(c) This roadway segment is classified as a 6-lane roadway, but is assumed to function as a 4-lane roadway for this scenario.
(d) The ADT was taken from the March 25, 2005 Espanada Mixed Use Development Traffic Study prepared by Darnell & Associates, Inc.

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Future Transit Service

A number of regional transit improvements are envisioned that will either serve the Urban Core area. Many of these lines provide transit stations within the Urban Core Specific Planning area and are integrated into the land use and transportation components of the specific plan. Other routes are located with transit stations nearby; these routes could serve the urban core area. It should be noted that most routes listed below do not have implementation dates except for the first phase of the regional BRT project and that some of the route numbers may change in the future. **Figure 5-3** depicts those planned regional routes in the South Bay.

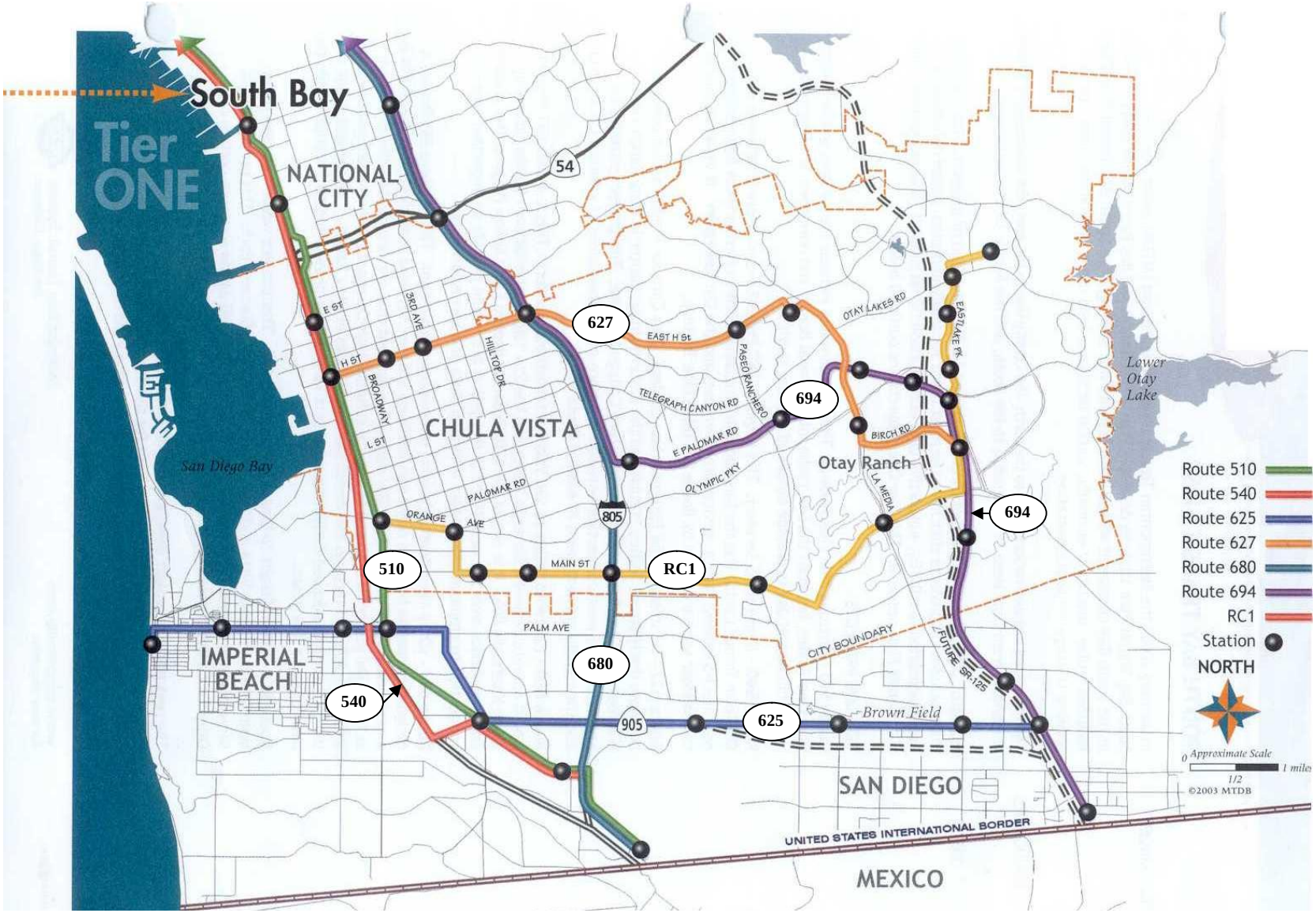
Route 510 (Existing Blue Line Trolley) would have increased frequency of service. LRT headways would be reduced from 10 minutes to 5 minutes. In order to achieve this level of transit service, it would be necessary to grade separate the LRT tracks from key surface streets, such as E Street and H Street within the project area.

South Bay Transit First Project would provide Regional Bus Rapid Transit (BRT) service between Otay Ranch in eastern Chula Vista and downtown San Diego. The first phase of the project would follow I-805 and SR-94, along with East Palomar Street. Phase 1 of the project could be completed by the Year 2010. The second phase of the project would extend the line to the Otay Border crossing and serve businesses in Otay Mesa.

Route 540 (I-5 Express Service) would provide Regional Bus Rapid Transit (BRT) service from San Ysidro to downtown San Diego and Old Town. This route would use median lanes in I-5 and would have a transit stop at H Street (with elevators to the H Street over crossing at I-5. This route would have infrequent stations, which would allow for shorter travel times, as compared to Route 510.

Route 627 (H Street BRT) would provide a transit connection between the Chula Vista Urban Core Specific Plan area and Southwestern College and the Eastern Urban Center. This route will connect the major activity centers in the redeveloping areas of western Chula Vista to the rapidly growing areas of eastern Chula Vista.

Route 680 (Sorrento Valley to San Ysidro International Border) would provide Regional BRT service between the San Ysidro and Sorrento Mesa along the I-805 corridor. This service would connect Chula Vista to major employment centers in Kearny Mesa and Sorrento Mesa. Transit stations for this route would be located on I-805 at H Street.



Kimley-Horn and Associates, Inc.

Figure 5-3
Regional Transit Routes

6.0 YEAR 2030 WITH IMPROVEMENTS CONDITIONS

This section provides a description of the Year 2030 traffic conditions at locations where improvements were assumed due to the addition of a project feature or recommended to achieve acceptable LOS. Project features were assumed at locations where either the roadway segment or study intersection operates within acceptable thresholds, but were due to improvements associated with the UCSP. Improvements are recommended at the majority of roadway segments/intersections that exceeded the acceptable thresholds.

Road Network

The following section describes the recommended improvements along the roadway segments in the Urban Core study area. These recommended roadway widths will be used in developing the parkway recommendations and ROW dimensions. It should be noted that right-of-way (ROW) value for the Woodlawn Avenue segment is not shown on the cross section figure due to the uncertainty of the park area at this time.

Table 6-1 summarizes the proposed changes to the existing roadway network. It should be noted that roadway segments that did not have any changes compared to existing conditions were omitted from the table. As shown in the table, all improvements shown for Third Avenue, F Street, Broadway, and Woodlawn Avenue would be considered project features. Improvements along E Street and H Street are recommended to achieve acceptable LOS.

Figures 6-1 to **6-10** illustrate the proposed cross sections for the corridors of E Street, F Street, H Street, Broadway, 3rd Avenue, and Woodlawn Avenue.

TABLE 6-1
PROPOSED ROADWAY SEGMENT DIMENSIONS

Street Segment	Total Existing Travel Lanes	Total Proposed Travel Lanes	Existing Turn Lane/Median	Proposed Turn Lane/Median	Existing Curb-to-Curb Width	Proposed Curb-to-Curb Width	Existing Parking	Proposed Parking	Existing Bike Lanes	Proposed Bike Lanes
Project Feature										
Third Avenue between E Street and F Street	2	2	No Median	No Median	72’	24’/68’ *	Y	Y/N *	N	N
Third Avenue between F Street and Madrona Street	4	2	Raised Median	Raised Median	101’	24’/68’ *	Y	Y/N *	N	N
Third Avenue between Madrona Street and G Street	4	2	No Median	No Median	72’	24’/68’ *	Y	Y/N *	N	N
F Street between Third Avenue and Fourth Avenue	4	2	Raised Median, Bike Lanes (Class III)	Two-way Left Turn Lane/Raised Median, Bike Lanes (Class I)	65’	48’	Y	Y	Y	Y
F Street between Fourth Avenue and I-5	2	2	No Median, Bike Lanes (Class III)	Two-way Left Turn Lane/Raised Median, Bike Lanes (Class I)	40’	48’	Y	Y	Y	Y
Broadway between E Street And F Street	4	4	No Median	Raised Median, Bike Lanes (Class II)	68’	82’	Y	Y	N	Y
Broadway between F Street and H Street	4	4	Two-way Left Turn Lane	Raised Median, Bike Lanes (Class II)	82’	82’	Y	Y	N	Y
Woodlawn Avenue between E Street and H Street	2	2	No Median	Park Area	36’	Varies	Y	Y	N	N
Improvements to Achieve Acceptable LOS										
E Street between I-5 and 300’ east of I-5	4	4	Two-Way Left Turn Lane	Two-Way Left Turn Lane, Westbound Right Turn Lane	70’	76’	N	N	N	N
H Street between I-5 and Broadway	4	6	Two-Way Left Turn Lane	Raised Median, Bike Lanes (Class II)	64’	94’	N	N	N	Y

* The 24-foot cross section assumes no parking along Third Avenue and the 68-foot cross section assumes diagonal parking on both sides of Third Avenue.

E Street Corridor

The roadway cross section on E Street is adequate to serve future traffic needs except for the segment between Woodlawn Avenue and I-5. To mitigate the intersection impact at the I-5 NB Ramp with E Street, a westbound right-turn lane is required. It is recommended that E Street be widened between Woodlawn Avenue and I-5, which would add an additional six feet in the curb-to-curb width. This segment will need an additional 22 feet of ROW. This added width will allow for an extended right-turn lane on westbound E Street onto the I-5 northbound on-ramp. This improvement would help to reduce the queues in the westbound direction and improve the operations at the I-5 NB ramp and at Woodlawn Avenue intersection.

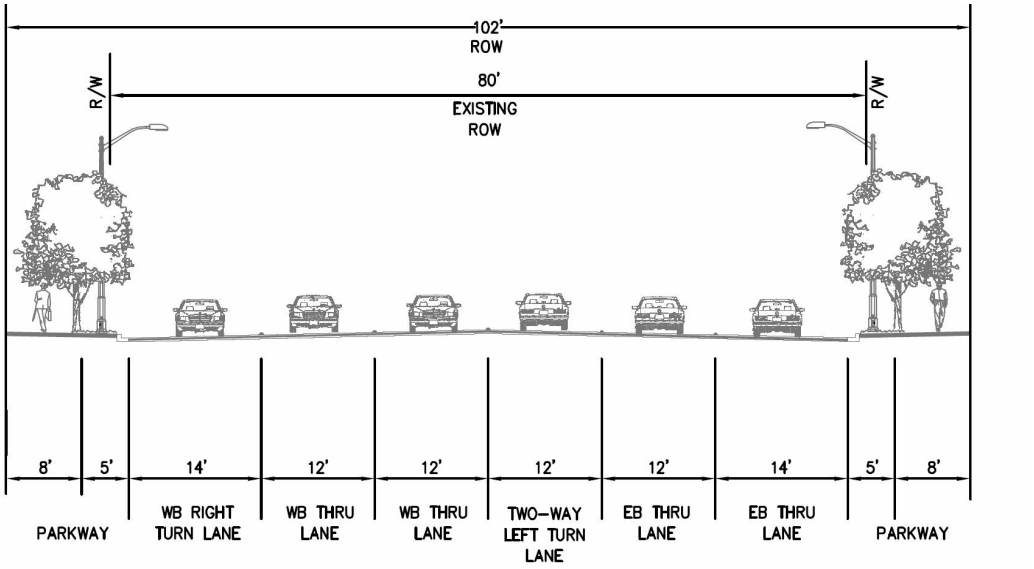


Figure 6-1 Proposed Cross Section, E Street Between I-5 and 300' East of I-5 N Ramp

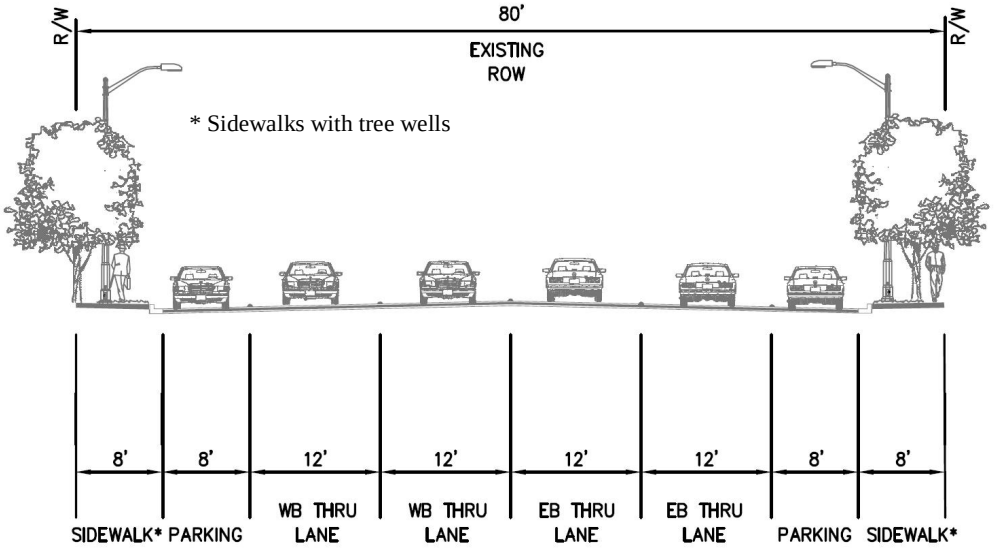


Figure 6-2 Proposed Cross Section, E Street Between 3rd Avenue and Broadway

F Street Bike Lanes

As a project feature of the Urban Core Specific Plan, Class I bike lanes would be added to F Street between Third Avenue and I-5. The new Class I bike lanes ("bikeway") will improve the connectivity of the Urban Core to the Bayfront Area encouraging better synergy between uses/users on the Bayfront and Urban Core, including pedestrians and bicyclists. Wide parkways, off-street bike lanes, and wide sidewalks will provide an opportunity to stroll or bicycle through the Urban Core. A Class II facility would exist on F Street where a Class I bikeway cannot be accommodated due to mature trees or new/existing medians. For F Street, a 16-foot parkway is provided between Fourth Avenue and Broadway and a 12-foot parkway is provided between Third Avenue and Fourth Avenue. Existing trees from Third Avenue to Broadway are proposed to be preserved and incorporated into the streetscape theme. It is suggested that the overhead utility line be placed underground as part of this improvement project.

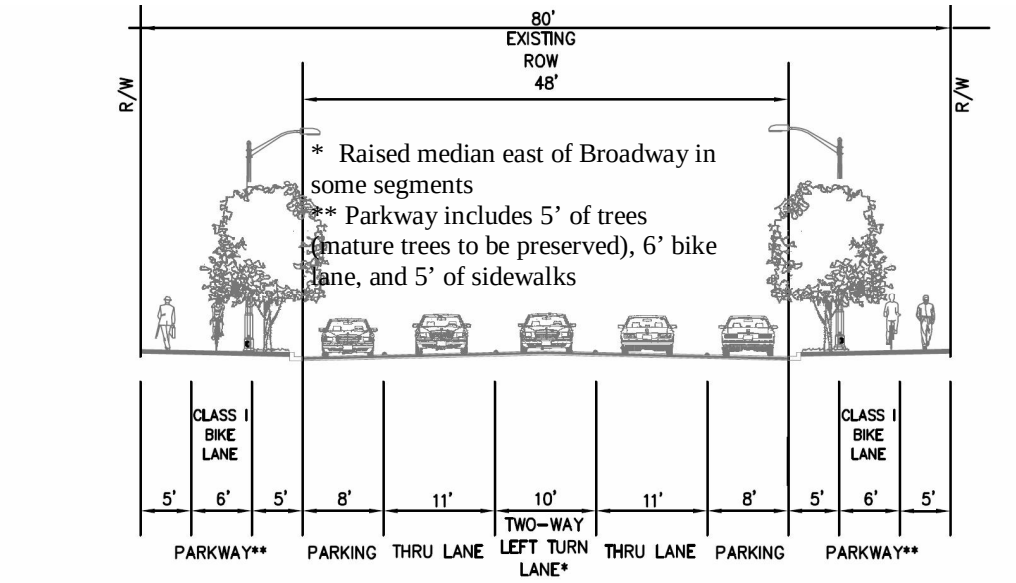


Figure 6-3 Proposed Cross Section, F Street Between Third Avenue and I-5

H Street Corridor

The segment of H Street from Third Avenue to Broadway will be widened by eight feet. The new segment configuration will feature two travel lanes and a bike lane in each direction, as well as a raised center median. One side of the street will also have parallel parking.

An additional 30 feet in the curb-to-curb width will be added to H Street between Broadway and I-5 to include an additional travel and in both directions. This improvement is consistent with the ultimate classification of H Street as defined in the adopted General Plan. The additional travel lane is needed to accommodate buildout daily and peak-hour traffic on H Street and would improve the operations along this segment.

Further, a Class II bikeway is proposed to be added to H Street between Third Avenue and I-5. H Street is intended as the "backbone" of the Urban Core, as it connects the transit focus areas at H Street/Third Avenue and H Street/I-5 and facilitates local and regional transit routes (and Bus Rapid Transit in the future). Twenty-foot wide sidewalks are proposed in order to create a grand boulevard feeling and promote pedestrian use.

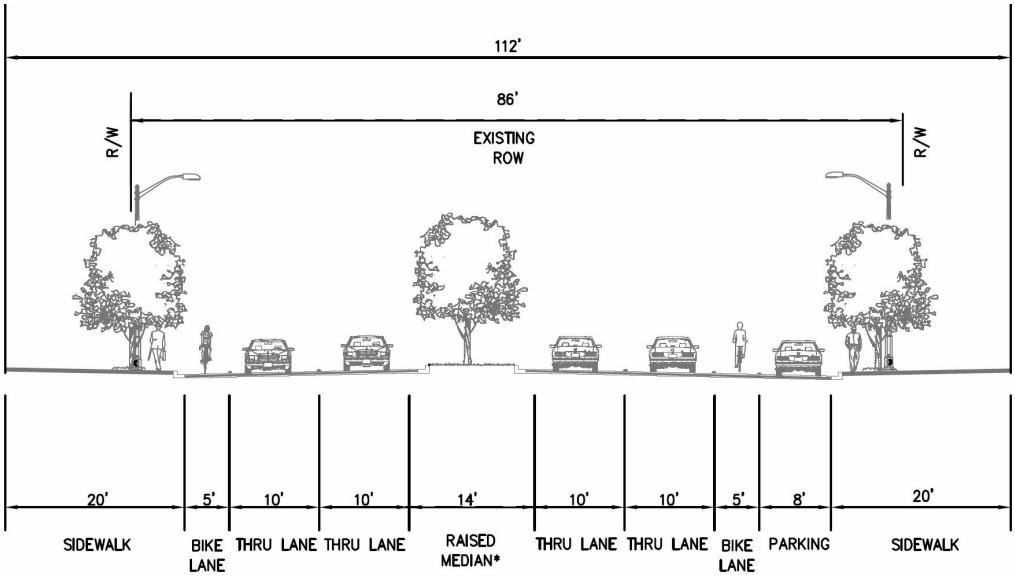


Figure 6-4 Proposed Cross Section, H Street Between Third Avenue and Broadway

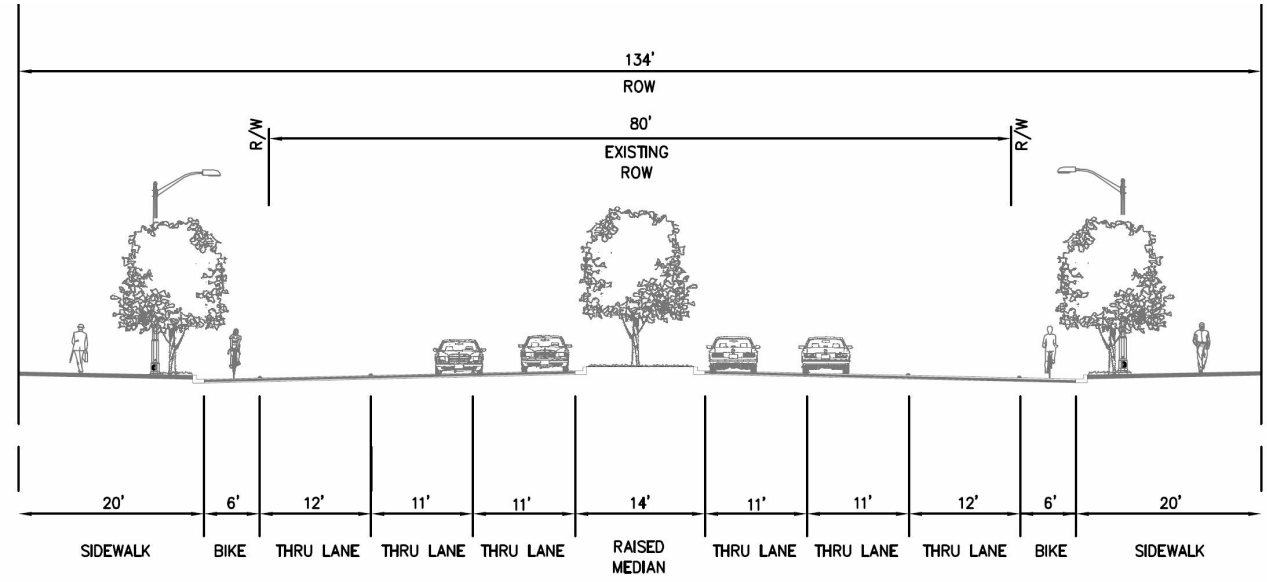


Figure 6-5 Proposed Cross Section, H Street Between Broadway and I-5

Broadway Corridor

Broadway would be improved by adding a 12-foot raised median as a project feature. In addition, a Class II bikeway is proposed to be added along Broadway between C Street and L Street. Broadway will be widened by 14 feet between E Street and F Street to accommodate a final configuration consisting of the raised median, bike lanes in both directions, and narrower traffic lanes. Between F Street and H Street, the roadway would not need to be widened and the existing median would be converted to a raised median. Nine-foot wide sidewalks will support pedestrian circulation. It is proposed to retain the existing palm trees within parkway areas.

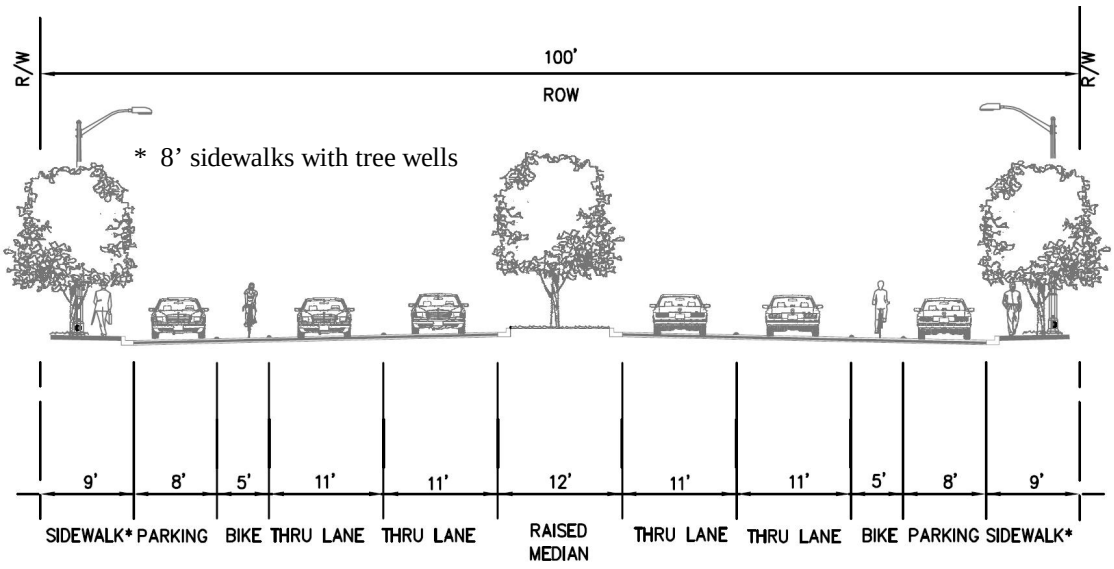


Figure 6-6 Proposed Cross Section, Broadway Between C Street and L Street

3rd Avenue Pedestrian Enhancements

As a project feature of the Urban Core Specific Plan, the sidewalks on 3rd Avenue between E Street and G Street will be widened. The widening of the sidewalks will encourage a higher pedestrian use of 3rd Avenue and provide opportunity for outdoor activity areas within the Village Area. The cross section of 3rd Avenue varies greatly between E Street and G Street. The roadway width varies between 72 feet and 101 feet.

The roadway will be narrowed to provide one through lane in each direction between E Street and G Street. The remainder of Third Avenue to L Street will stay in the current four-lane configuration. It is proposed to retain the existing median. Three distinct cross sections will be provided. On-street parking may be reduced with the implementation of the Third Avenue enhancements. It is recommended that these enhancements be provided in coordination with the provision of off-street parking in the vicinity so that parking impacts do not occur to surrounding areas.

Diagonal parking will be provided for most parts of Third Avenue. Figure 6-7 shows the cross section where angled parking is permitted. Due to relatively high through traffic volumes, it is recommended that the roadway be of sufficient width to allow vehicles to back out without blocking through traffic lanes. It should be noted that the curb-to-curb dimension is not reduced where diagonal parking is provided on the segment of Third Avenue between E Street and F Street.

Figure 6-8 illustrates selected mid-block locations where pedestrian crossing will occur. The roadway would be narrowed to 24 feet by extending the curb into the street. Curbs will be extended toward the roadway centerline about 38 feet on each side of the roadway. This reconfiguration would allow for additional pedestrian crossings with reduced crossing distances at selected locations.

Figure 6-9 shows the treatment at intersections. This cross section allows for a right-turn lane and a left-turn lane to be provided. Although the turning volumes from Third Avenue are not very high, these lanes are needed to remove turning traffic from the through traffic. Turning vehicles will need to yield to anticipated high pedestrian traffic volumes; the turn lanes allow these yielding vehicles to pull out of the through travel lanes. This intersection configuration will adequately accommodate future traffic demands along Third Avenue while providing a significantly enhanced pedestrian friendly streetscape.

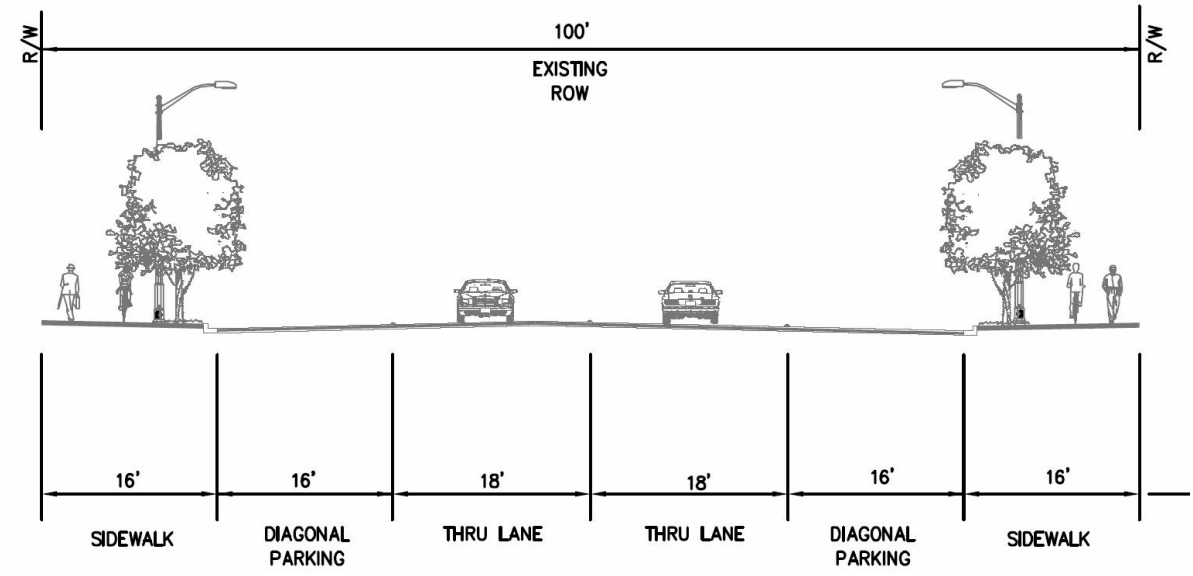


Figure 6-7 Proposed Cross Section, 3rd Avenue With Diagonal Parking

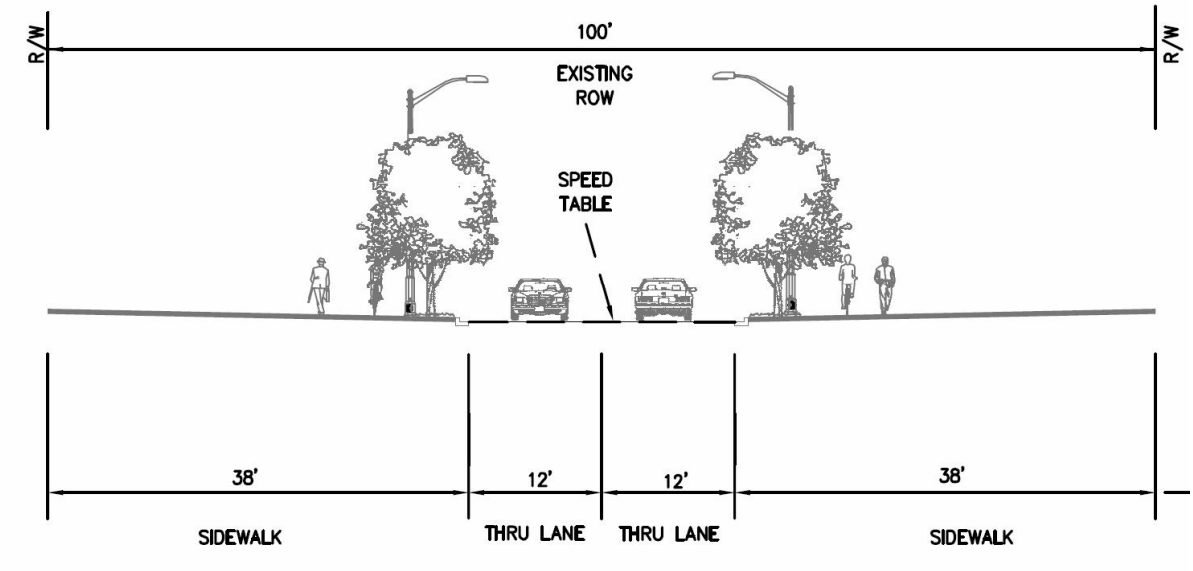


Figure 6-8 Proposed Cross Section, 3rd Avenue Without Diagonal Parking

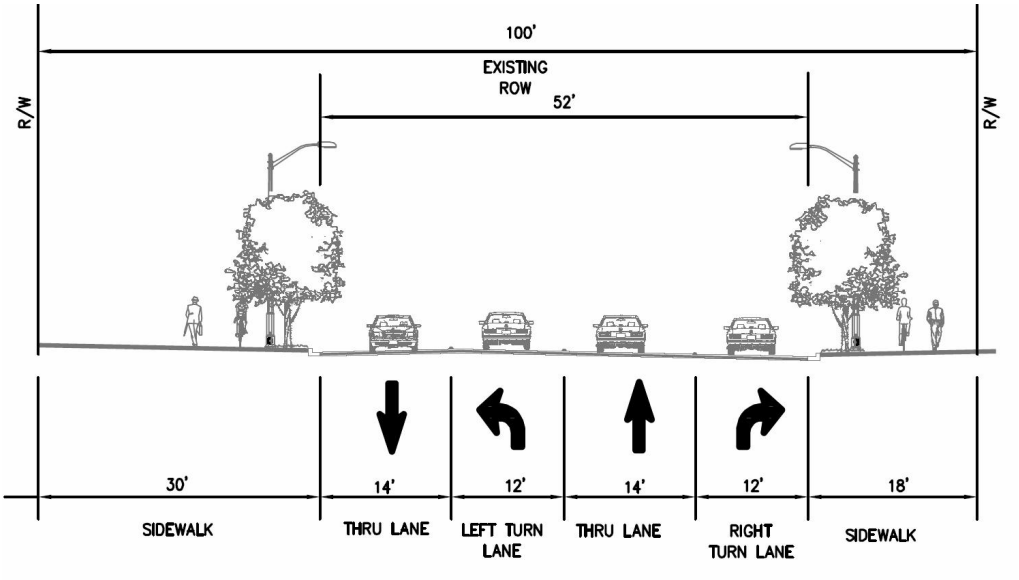


Figure 6-9 Proposed Cross Section, 3rd Avenue At Signalized Intersections

Woodlawn Avenue Couplet

As a project feature, Woodlawn Avenue would be extended and converted to a one-way couplet between south of E Street and north of H Street. Woodlawn Avenue is not built as a continuous roadway between E Street and H Street. The creation of the one-way couplet would include the construction of a neighborhood park between the one-way streets. The neighborhood park may include a variety of recreational uses such as playgrounds, walkways, and basketball courts. The couplet could be implemented over time as property redevelops.

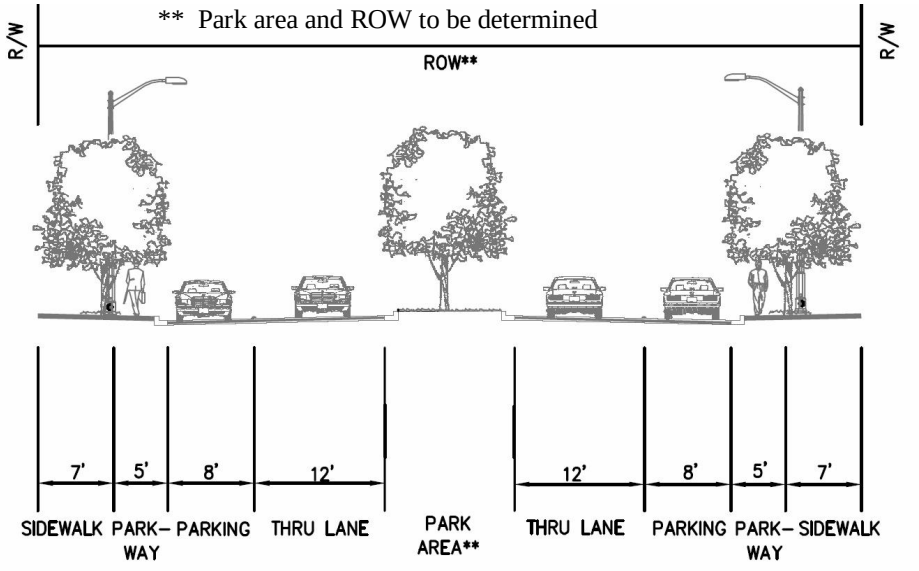


Figure 6-10 Proposed Cross Section, Entire Length of Woodlawn Avenue

Roadway Segment Analysis

Table 6-2 summarizes the Year 2030 With Improvement Conditions LOS analysis for the roadway segments with assumed improvements located in the Urban Core. As shown in this table, H Street between I-5 and Broadway would be widened to a six-lane gateway. As a result, the acceptable ADT would increase and result in an acceptable LOS. For 3rd Avenue between E Street and G Street, this segment would be retained or narrowed as a two-lane downtown promenade. As a result, the acceptable ADT would decrease and result in an unacceptable LOS. However, 3rd Avenue corridor intersections would operate at acceptable levels of service and the narrowing of 3rd Avenue and increasing the width of the sidewalks would create a friendlier pedestrian atmosphere.

TABLE 6-2

YEAR 2030 WITH IMPROVEMENTS CONDITIONS ROADWAY SEGMENT LEVEL OF SERVICE SUMMARY

STREET	SEGMENT	DAILY TRAFFIC VOLUME	BEFORE IMPROVEMENTS	ACCEPTABLE VOLUME	DAILY SEGMENT LOS	AFTER IMPROVEMENTS	ACCEPTABLE VOLUME	DAILY SEGMENT LOS
H Street	I-5 - Broadway	52,000	4 Lanes	43,200	**F**	6 Lanes	61,200	D
3rd Avenue	E Street - G Street	21,000	2/4 Lanes	14,400/ 33,350	A	2 Lanes	14,400	**F**

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Intersection Improvements

Due to the unique nature of urban revitalization, the exact timing, sequence and extent of infill development is hard to predict and doing so would be speculative. The anticipated 20-25 year implementation of the Specific Plan therefore necessitates a different approach to implementing the recommended long-term intersection improvements in order to achieve acceptable LOS thresholds. The 20 intersection improvements that follow have been divided into three tiers for phased long term implementation based on need and enhancement to the function of the overall street network. It should be noted that three of the intersections (#7, #16, and #21) are proposed as project features rather than necessitated to improve intersection LOS and the improvements will likely be related to and timed with implementation of streetscape improvements along Third Avenue. The intersection numbers correspond to the intersection numbering system outlined in this report.

Tier 1 Improvements

- Provide a grade-separated intersection at the E Street and H Street trolley crossing locations. This improvement would be considered a regional improvement as the trolley provides service throughout the region. Coordination with MTS/SANDAG will be required for this improvement.
- **#1 Bay Boulevard/I-5 Southbound Ramp/E Street**: Add an eastbound through and right-turn lane, southbound right-turn lane, and northbound right-turn lane. Coordination with Caltrans will be required for this improvement.
- #**2 I-5 Northbound Ramp/E Street**: Add a westbound right-turn lane. Coordination with Caltrans will be required for this improvement.
- **#24 I-5 Southbound Ramp/H Street**: Add a southbound left, eastbound through and right-turn lanes. Coordination with Caltrans will be required for this improvement.
- **#25 I-5 Northbound Ramp/H Street**: Add a westbound through and right-turn lane and restripe south approach to accommodate dual left-turn lanes. Coordination with Caltrans will be required for this improvement.
- **#26 Woodlawn Avenue/H Street**: Change Woodlawn Avenue to a one-way couplet. This improvement is required to serve the intense redevelopment occurring on both sides of H Street. The couplet improvement is not required further north toward E Street.
- **#27 Broadway/H Street**: Add an eastbound transit queue jumper lane and westbound through and right-turn lanes.
- **#28 Fifth Avenue/H Street**: Change the northbound/southbound approaches to include protective plus permissive phasing and add a westbound right-turn lane.
- **#29 Fourth Avenue/H Street**: Add an eastbound/westbound right-turn lane.
- **#44 Fourth Avenue/SR-54 Eastbound Ramp**: Add an eastbound right-turn lane. Coordination with Caltrans will be required for this improvement.

Tier 2 Improvements

- **#34 Broadway/SR-54 Westbound Ramp**: Add a westbound right-turn lane. Coordination with Caltrans will be required for this improvement.
- #**59 J Street/I-5 Northbound Ramp**: Add an eastbound left-turn and westbound right-turn lane. Coordination with Caltrans will be required for this improvement.
- **#61 L Street/Bay Boulevard**: Signalize the intersection, add a southbound left-turn lane, and a northbound right-turn overlap phase to the traffic signal.

- **#63 Bay Boulevard/I-5 Southbound Ramp**: Signalize the intersection. Coordination with Caltrans will be required for this improvement.
- **#64 Industrial Boulevard/I-5 Northbound Ramp**: Signalize the intersection. Coordination with Caltrans will be required for this improvement.
- H Street from four lanes to six lanes from I-5 to Broadway

Tier 3 Improvements

- **#7 Third Avenue/E Street**: Convert the northbound and southbound shared right-through lane into exclusive right-turn lanes.
- **#13 Broadway/F Street**: Add an eastbound right-turn lane.
- **#16 Third Avenue/F Street**: Separate the southbound shared through-right lane into an exclusive through and right-turn lanes, convert the northbound shared through-right lane into an exclusive right-turn lane.
- **#21 Third Avenue/G Street**: Convert the northbound/southbound shared through-right lane into exclusive right-turn lanes.
- #**45 Fourth Avenue/Brisbane Street**: Add a southbound right-turn overlap phase to the traffic signal.
- **#57 Second Avenue/D Street**: Convert to an all-way stop controlled intersection.

In each individual tier, the City's existing monitoring program will determine exactly which projects are implemented first during the biannual CIP program review. In addition to determining timing and need, this systems and operations monitoring approach should also be used to further ascertain final design details of the intersection improvements and may include consideration of the effects on traffic flow as well as the impacts/benefits to other travel modes (e.g. pedestrians and bicycles) that are foundational to the successful implementation of the Specific Plan.

The recommended improvements at the study intersections listed above are shown in **Figure 6-11** and **6-11.1**. It should be noted that the E Street and H Street intersections between the I-5 NB Ramp and Woodlawn Avenue assumes a Light Rail Transit (LRT) grade separation, which would separate vehicular traffic from the trolley. It is recommended that the trolley tracks be grade separated along E and H Streets to improve intersection operations and to accommodate the planned increase in trolley frequency.

Recommendations at intersections 27, 33, and 54 do not improve conditions to an acceptable LOS due to ROW constraints. **Figure 6-12** shows the intersections that have improvements that are considered to be project features or improvements.

Intersection Analysis

Table 6-3 displays the LOS analysis results for the study intersections that have assumed improvements under the Year 2030 With Improvements scenario. As shown in this table, all study intersections could operate at LOS D or better during both peak periods with the proposed improvements, except for the following intersections:

- #27 Broadway/H Street
- #33 Hilltop Drive/H Street
- #54 3rd Avenue/J Street

At the Broadway/H Street intersection (Int. #27), an additional northbound and southbound through lane would be required in order to achieve an acceptable LOS D conditions. However, this improvement would require extensive widening of Broadway and H Street to allow for lane drops. Furthermore, this widening would create longer pedestrian crossings. As such, the recommended improvements of the eastbound queue jumper lane and the additional westbound through and right-turn lanes would improve the intersection from LOS F to LOS E conditions.

At the Hilltop Drive/H Street intersection (Int. #33), no improvements would be recommended due to ROW constraints. The poor LOS at this intersection is primarily caused by the high traffic volumes in the eastbound/westbound movements. Additional through and/or turn lanes would be required in order to improve this intersection to an acceptable LOS. With no improvements, this intersection would remain at LOS E during both peak periods.

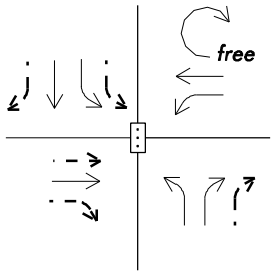
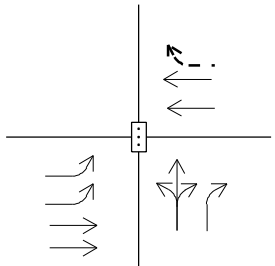
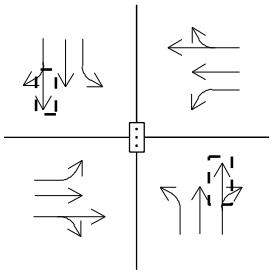
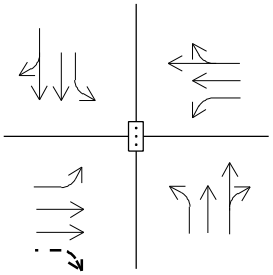
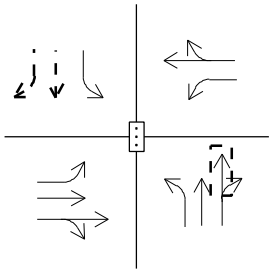
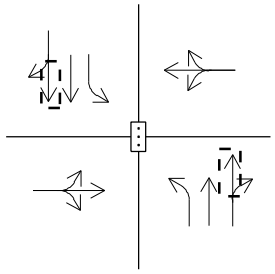
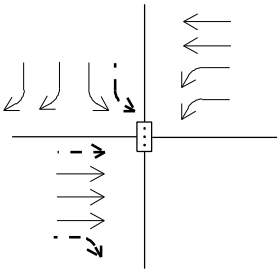
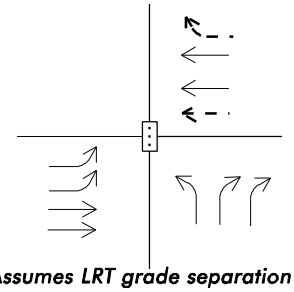
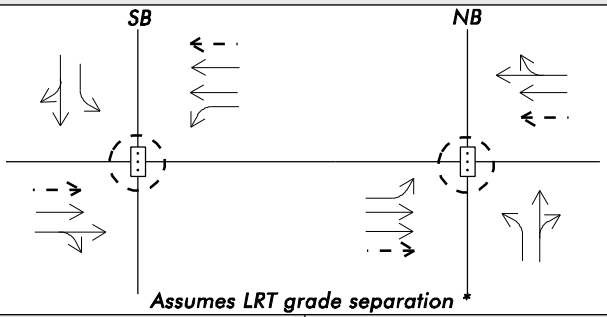
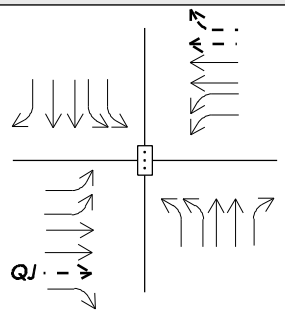
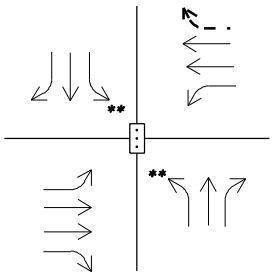
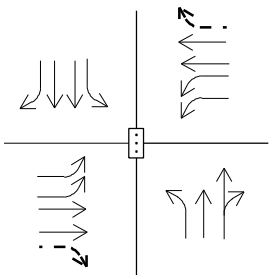
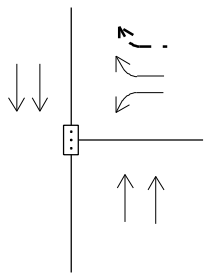
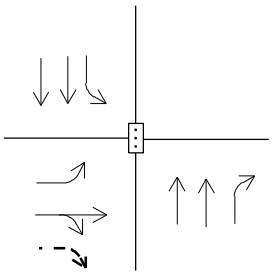
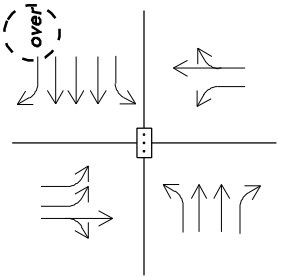
At the 3rd Avenue/J Street intersection (Int. #54), the required improvement of an additional southbound right-turn lane would impact the Henry's Marketplace building, which is built adjacent to the sidewalk. Therefore, this improvement is not recommended. As a result, the LOS would remain at LOS E. However, if the property were to redevelop in the future, additional ROW could be obtained for the southbound right-turn lane.

It should be noted that all of the study intersections along 3rd Avenue would operate at an acceptable LOS without improvements. However, due to the narrowing of 3rd Avenue to create a friendlier pedestrian atmosphere, one of the through lanes along 3rd Avenue in each direction would be converted to an exclusive right-turn lane.

Figure 6-13 shows the locations of these intersections that would still remain at LOS E. **Appendix C** contains the peak-hour intersections LOS calculation worksheets.

West Side Shuttle Service

West Side Shuttle is a concept proposed to serve both the Urban Core Specific Plan and the Bayfront Master Plan areas in western Chula Vista. This service would complement existing and planned future transit improvements. The shuttle would provide localized service between various uses in western Chula Vista and provide connections to the regional transit system. **Figure 6-14** depicts the proposed routing of the West Side Shuttle. The shuttle would provide regional connectivity with stations serving Route 510 at the existing E Street station, Routes 510, 540 (future service), and 627 (future service) at the existing H Street trolley station, and the future station on H Street near Third Avenue serving future Route 627. In addition, five other stations are planned to serve destinations within the Urban Core Specific Plan, along with three additional stations within the Bayfront Master Plan.

1. E St/Bay Blvd -I-5 SB Ramps	2. E St/I-5 NB Ramps	7. E St/3rd Ave	13. F St/Broadway
	 Assumes LRT grade separation *		
16. F St/3rd Ave	**21. G St/3rd Ave**	**24. H St/I-5 SB Ramps**	**25. H St/I-5 NB Ramp**
			 Assumes LRT grade separation *
26. H St/Woodlawn Ave		**27. H St/Broadway**	**28. H St/5th Ave**
 Assumes LRT grade separation *			
29. H St/4th Ave	**34. Broadway/ SR-54 WB Off-Ramp**	**44. 4th Ave/SR-54 EB Ramp**	**45. 4th Ave/Brisbane St**
			

* The Light Rail Transit Crossings on E Street and H Street will have to be grade separated from the vehicular traffic along E Street and H Street.

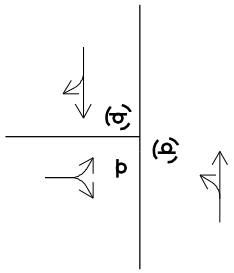
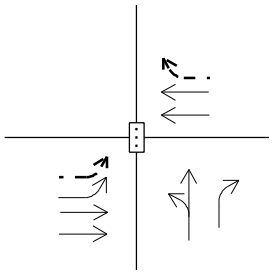
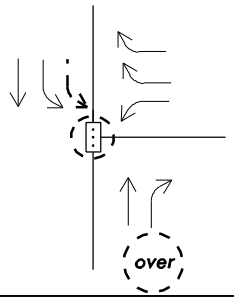
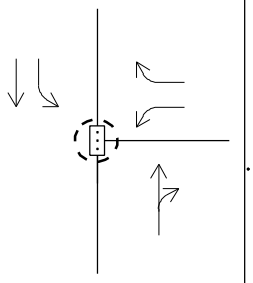
** To improve this intersection the left turn phasing from the indicated movements will be changed to protective + permissive.

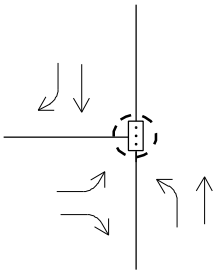
Legend:

- Traffic Signal
- Stop Sign
- Existing lane
- Proposed Improvement
- Lane to be "altered"
- over New Overlap Phase
- QJ Queue Jumper

KIMLEY-HORN and ASSOCIATES

Figure 6-11
Year 2030 with Improvements
Intersections Geometrics

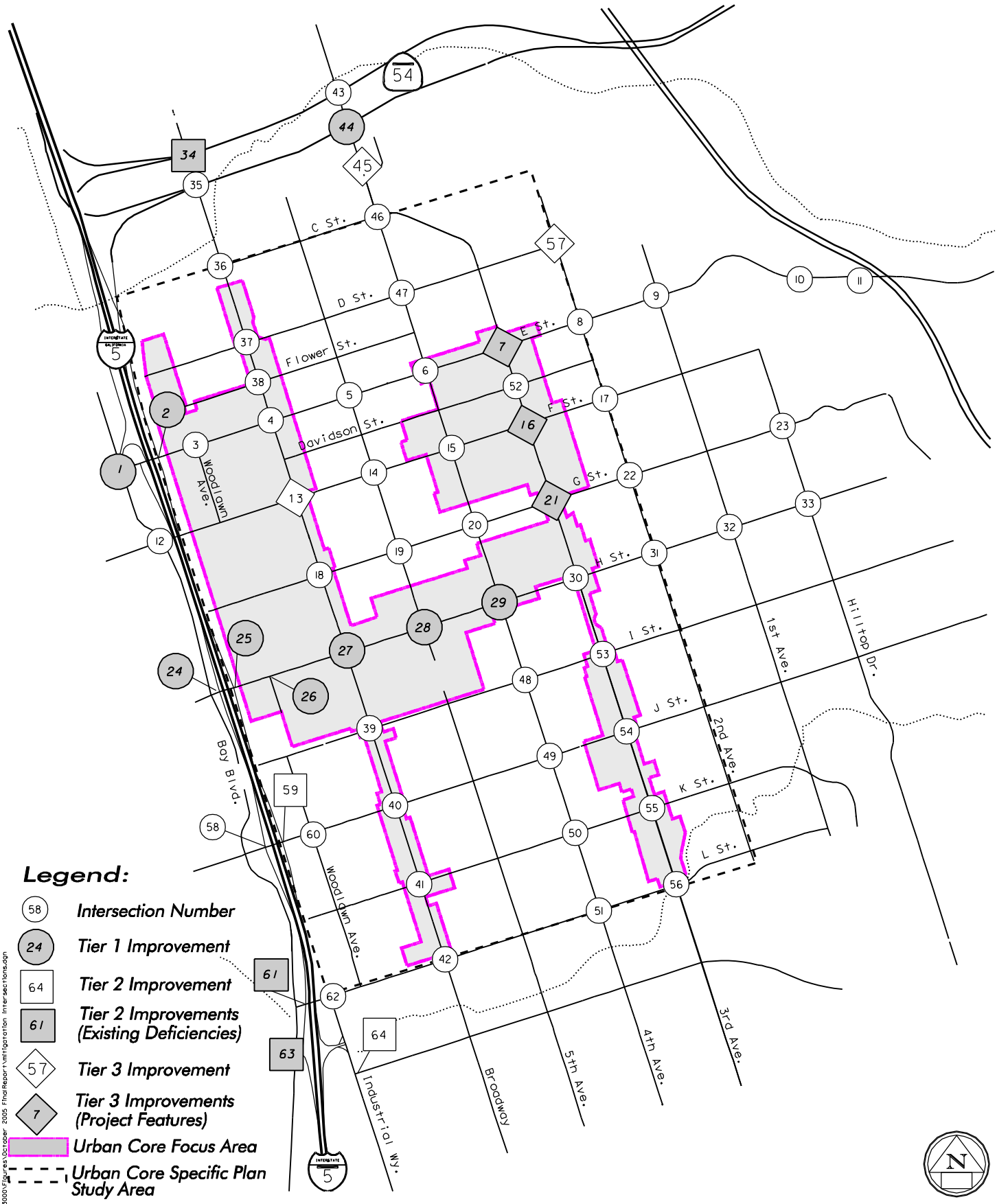
57. 2nd Ave/D St	59. I-5 NB Ramps/J St	61. Bay Blvd/L St	63. Bay Blvd/I-5 SB Ramps
			

64. Industrial Blvd/I-5 NB Ramps


Legend:

- Traffic Signal
- New Traffic Signal
- Existing lane
- Proposed Improvement
- New Overlap Phase
- Lane to be "altered"
- New Stop Sign

Figure 6-11.1
Year 2030 with Improvements
Intersections Geometrics



Legend:

- 58 — Intersection Number
- 24 — Tier 1 Improvement
- 64 — Tier 2 Improvement
- 61 — Tier 2 Improvements (Existing Deficiencies)
- 57 — Tier 3 Improvement
- 7 — Tier 3 Improvements (Project Features)
- Urban Core Focus Area
- Urban Core Specific Plan Study Area

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Figure 6-12
Project Features/Improvements at Study Intersection

TABLE 6-3

YEAR 2030 WITH IMPROVEMENTS CONDITIONS

PEAK HOUR INTERSECTION LEVEL OF SERVICE SUMMARY

	INTERSECTION	PEAK HOUR	BEFORE IMPROVEMENTS		AFTER IMPROVEMENTS		PROPOSED IMPROVEMENTS (c)
			DELAY (a)	LOS (b)	DELAY (a)	LOS (b)	
1	Bay Blvd-I-5 SB Ramp @ E St (f)	AM	**58.4**	**E**	25.5	C	Add EBT, EBR, SBL, SBR and NBR lanes.
		PM	**302.9**	**F**	37.2	D	
2	I-5 NB Ramp @ E St (f)	AM	**60.5**	**E**	26.1	C	Add WBR lane.
		PM	31.9	C	20.6	C	
7	3rd Ave @ E St (d)	AM	12.9	B	21.5	C	Convert NBT shared RT lane and SBT shared RT lane into exclusive RT lanes.
		PM	24.8	C	25.7	C	
13	Broadway @ F St	AM	17.7	B	20.0	B	Add EBR lane.
		PM	**66.1**	**E**	39.7	D	
16	3rd Ave @ F St (d)	AM	15.9	B	20.4	C	Separate SBT shared RT lane into an exclusive SBR lane and a SBT lane; Convert the NBT shared RT lane into an exclusive NBR lane.
		PM	23.5	C	23.2	C	
21	3rd Ave @ G St (d)	AM	11.8	B	10.3	B	Convert NBT shared RT lane and SBT shared RT lane into exclusive RT lanes.
		PM	10.5	B	15.2	B	
24	I-5 SB Ramp @ H St (f)	AM	36.7	D	21.5	C	Add SBL, EBT, and EBR lanes.
		PM	**84.5**	**F**	27.1	C	
25	I-5 NB Ramp @ H St (f)	AM	47.6	D	23.1	C	Add WBR, WBT, and restripe south approach to accommodate dual left turns.
		PM	**138.4**	**F**	31.7	C	
26	Woodlawn Ave @ H St (e)	AM	33.7	C	32.2/13.3 (e)	C/B (e)	Change Woodlawn Ave. to a one way couplet.
		PM	**260.6**	**F**	22.2/28.8 (e)	C/C (e)	
27	Broadway @ H St	AM	42.7	D	36.4	D	Add EBT Queue Jumper Lane, WBT and WBR lanes
		PM	**118.1**	**F**	**77.0**	**E**	
28	5th Ave @ H St	AM	15.2	B	19.1	B	Change NB and SB approaches to protective + permissive phasing and add WBR lane.
		PM	**61.6**	**E**	52.0	D	
29	4th Ave @ H St	AM	38.6	D	30.3	C	Add EBR and WBR lanes.
		PM	**59.4**	**E**	40.2	D	
33	Hilltop Dr @ H St	AM	**58.3**	**E**	**58.3**	**E**	Do nothing due to ROW Constraints.
		PM	**74.2**	**E**	**74.2**	**E**	

Notes:

Bold values indicate intersections operating at LOS E or F.

EBL=Eastbound left turn lane; EBT=Eastbound through lane; EBR=Eastbound right turn lane; NBL=Northbound left turn lane; NBT=Northbound through lane; NBR=Northbound right turn lane; WBL=Westbound left turn lane; WBT=Westbound through lane; WBR=Westbound right turn lane; SBL=Southbound left turn lane; SBT=Southbound through lane; SBR=Southbound right turn lane.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

(c) See figures 6-21 to 6-21.1 for the proposed improvements at the study intersections.

(d) Change in travel lanes is due to narrowing of 3rd Avenue.

(e) The Woodlawn Avenue couplet creates 2 new intersections. The first number/letter corresponds to the delay/LOS at the west intersection and the second number/letter corresponds to the delay/LOS at the east intersection.

(f) Coordination with Caltrans will be required for the proposed improvement at this intersection.

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TABLE 6-3

YEAR 2030 WITH IMPROVEMENTS CONDITIONS

PEAK HOUR INTERSECTION LEVEL OF SERVICE SUMMARY (Continued)

	INTERSECTION	PEAK HOUR	BEFORE IMPROVEMENTS		AFTER IMPROVEMENTS		PROPOSED IMPROVEMENTS (c)
			DELAY (a)	LOS (b)	DELAY (a)	LOS (b)	
34	Broadway @ SR-54 WB Ramp (f)	AM	**190.6**	**F**	45.2	D	Add WBR lane
		PM	16.2	B	14.8	B	
44	4th Ave @ SR-54 EB Ramp (f)	AM	37.2	D	22.6	C	Add EBR lane.
		PM	**95.2**	**F**	25.2	C	
45	4th Ave @ Brisbane St	AM	25.8	C	24.2	C	Add SBR overlap phase.
		PM	**61.5**	**E**	50.1	D	
54	3rd Ave @ J St	AM	22.9	C	22.9	C	Do Nothing due to impacts on Henry's Building.
		PM	**74.5**	**E**	**74.5**	**E**	
57	2nd Ave @ D St	AM	31.2	D	27.0	D	Convert to an all-way stop control intersection.
		PM	36.0	**E**	18.6	C	
59	J St @ I-5 NB Ramp (f)	AM	**135.2**	**F**	28.3	C	Add EBL and WBR lanes.
		PM	**61.7**	**E**	24.1	C	
61	L St @ Bay Blvd	AM	22.7	C	18.1	B	Add SBL lane, signalize intersection, and add NBR overlap phasing.
		PM	**203.0**	**F**	17.1	B	
63	Bay Blvd @ I-5 SB Ramp (f)	AM	**84.0**	**F**	17.7	B	Signalize intersection.
		PM	**221.2**	**F**	46.9	D	
64	Industrial Blvd @ I-5 NB Ramp (f)	AM	26.0	D	12.6	B	Signalize intersection.
		PM	**66.5**	**F**	20.8	C	

Notes:

Bold values indicate intersections operating at LOS E or F.

ECL= Exceeds calculable limit . At intersections at or over capacity, the calculated delay value becomes unreliable.

EBL=Eastbound left turn lane; EBT=Eastbound through lane; EBR=Eastbound right turn lane; NBL=Northbound left turn lane; NBT=Northbound through lane; NBR=Northbound right turn lane; WBL=Westbound left turn lane; WBT=Westbound through lane; WBR=Westbound right turn lane; SBL=Southbound left turn lane; SBT=Southbound through lane; SBR=Southbound right turn lane.

(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a two-way stop-controlled intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 6.0

(c) See figures 6-21 to 6-21.1 for the proposed improvements at the study intersections.

(d) Change in travel lanes is due to narrowing of 3rd Avenue.

(e) The Woodlawn Avenue couplet creates 2 new intersections. The first number/letter corresponds to the delay/LOS at the west intersection and the second number/letter corresponds to the delay/LOS at the east intersection.

(f) Coordination with Caltrans will be required for the proposed improvement at this intersection.

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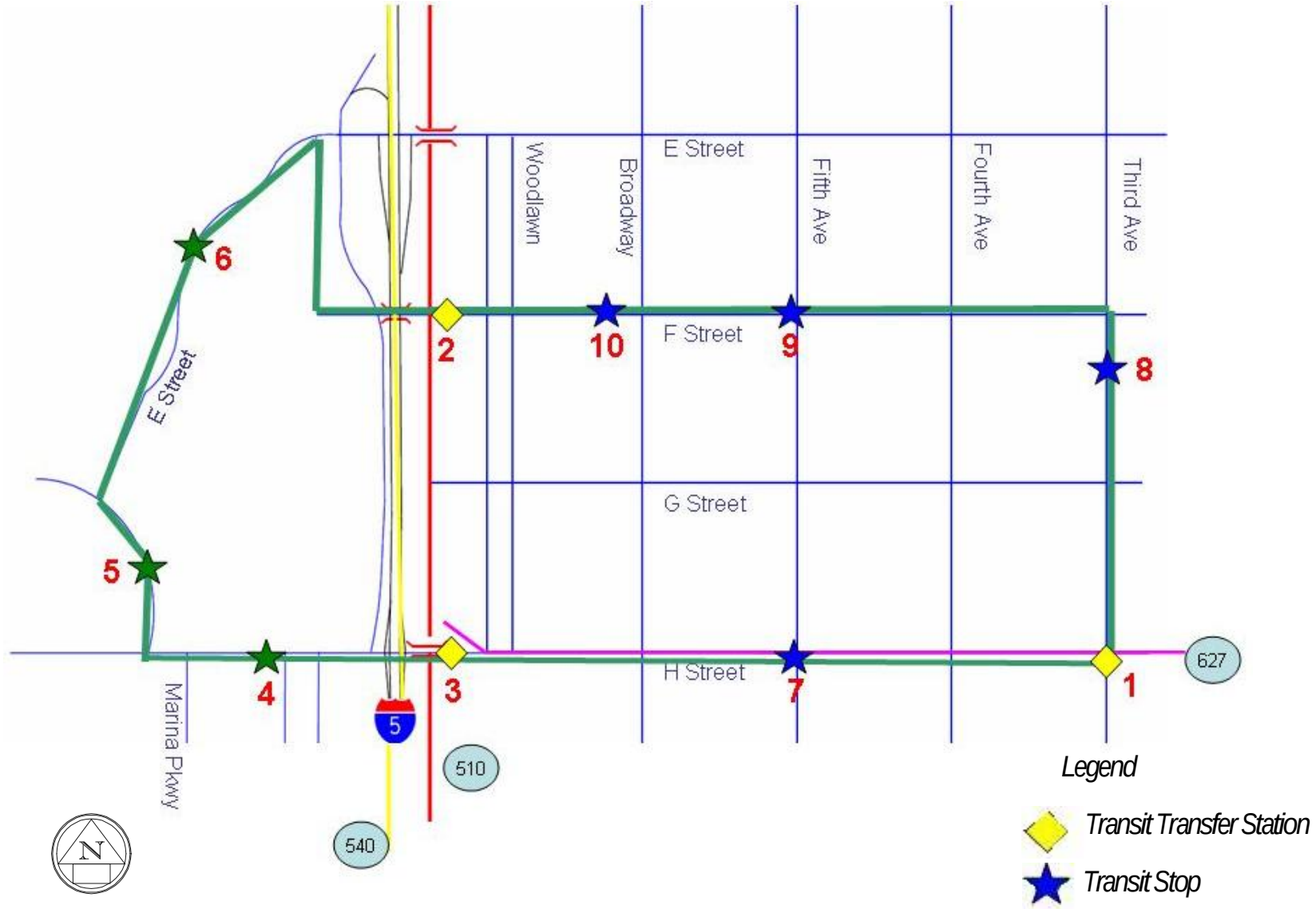
Figure 6-13
Study Intersections Remaining LOS E



Kimley-Horn and Associates, Inc.

Figure 6-14
West Side Shuttle Proposed Route

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7.0 FINDINGS AND CONCLUSIONS

The following section provides a summary of the key findings and study recommendations.

- The Urban Core Specific Plan (UCSP) focus area is located east of I-5, west of Del Mar Avenue, north of L Street, and south of C Street.
- Approximately 331,000 ADT is expected with the full build-out of the Urban Core, which is an increase of 141,000 ADT over existing conditions.
- A total of 64 intersections and 32 roadway segments were identified for analysis.
- Under existing conditions, three intersections operate at LOS E or worse during the peak periods and all roadway segments function at an acceptable LOS.
- Under Year 2030 conditions, 20 intersections operate at LOS E or worse during the peak periods and all but two roadway segment functions at an acceptable LOS.
- Recommended improvements were made along nine roadway segments within the study area, which include E Street, F Street, H Street, Woodlawn Avenue, and several segments along Broadway and 3rd Avenue.
- With the recommended improvements, the segment of H Street between I-5 and Broadway would function at an acceptable LOS, but the segment of 3rd Avenue between E Street and G Street would function at LOS F.
- The 3rd Avenue corridor intersections would operate at acceptable levels of service and the narrowing of 3rd Avenue and increasing the width of the sidewalks would create a friendlier pedestrian atmosphere.
- Recommended improvements were made at the 20 intersections that would operate at LOS E or worse during the peak periods and at locations where improvements to the road network would also affect the intersections at either end of the segment.
- Three of the 20 intersections (#7, #16, and #21) are proposed as project features rather than necessitated to improve intersection LOS and the improvements will likely be related to and timed with implementation of streetscape improvements along Third Avenue.

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